THE LANCET.

VOL. I.] LONDON, SATURDAY, FEBRUARY 8, 1834. [1833-34.

UNIVERSITY OF LONDON.

LECTURES
ON
COMPARATIVE ANATOMY
AND
ANIMAL PHYSIOLOGY,

DELIVERED BY

ROBERT E. GRANT, M.D., F.R.S.E., &c., &c.;

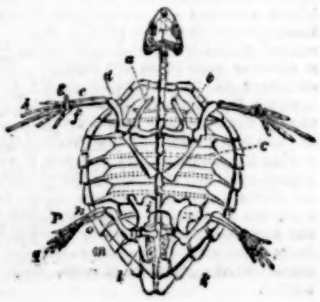
Fellow of the Roy. Coll. of Physicians of Edin.; and Professor of Comparative Anatomy and Animal Physiology in the University of London.

LECTURE XVII.

ON THE OSTEOLOGY OF CHELONIAN REPTILES.

THE tortoises and the turtles which compose the chelonian order of reptiles, differ from the *sauria* we have just examined, in having the ribs immoveable, and they differ from the serpents in having external members for locomotion. Looking at the singular exterior of these tortoises, shielded in a solid case like a molluscous animal in its shell, we should scarcely expect to find that this dense osseous covering enveloping the whole body consists of the same bones which compose the human skeleton. It presents a fine example of that unity of plan amidst diversity of form, that simplicity amidst variety, which is so conspicuous, and gives so pleasing a diversity, in the works of nature. These animals are remarkable among reptiles from their feeding for the most part on vegetable food, which is a character of rare occurrence among the saurians and almost unknown among serpents. They obtain this food at the bottom of the sea, or on the banks of lakes and of rivers, or on the dry land, and their outward forms vary to suit those different situations. From their small respiration, and from their having but one ventricle of the heart, where the venous and arterialized blood are partially mixed, and also from the imperfect development of their nervous system, all their movements and feelings are languid, and they have great tenacity of irritability and of life. Whether creeping among the low vegetables on which they subsist, or lying torpid in their shallow burrows, these slow-moving animals are constantly exposed to the trampling of the heavy quadrupeds feeding on the same kind of vegetable food, and their strong arched skeleton, which in the region of the trunk covers not only the viscera but even the muscles, affords them security from the dangers to which they are constantly exposed, and which they have neither sufficient acuteness to perceive nor activity to shun. In the aquatic species the form is depressed and flattened, or but slightly convex, and with sharp margins, which is the best adapted for cutting with the least resistance the liquid element through which they move. Thus shielded by their carapax above, and their plastron beneath, they differ as much from the other reptiles, the serpents and lizards, as fishes do from cetacea, or birds from bats, and their osteology differs remarkably from that of other reptiles. That difference of form in the skeleton (*HH*) arises chiefly from the great development of the ribs (*HH, c*) which form the carapax, and from the development of the sternum which composes the plastron beneath; for when we look

HH



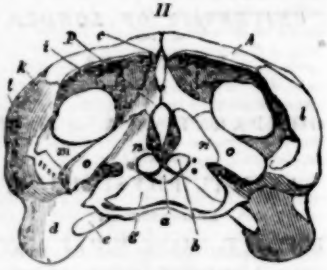
at the other parts of the skeleton, we see no peculiarities so remarkable in the head or in the cervical vertebræ, or in the arms or the legs, or in the coccygeal vertebræ.

The bones of these chelonian animals, like those of most reptiles, have a coarse fibrous structure, containing a large quantity of animal matter between the fibres of the phosphate of lime,—a condition of their osseous system which indicates their inferiority in the scale. In the interior even of the long bones of this enormous turtle you observe there are no cavities, either in the humerus or in the femur; that the interior of these sections of the long bones is filled throughout their whole extent with a spongy cancellated texture, passing completely from the one extremity of the bones to the other; and in this character also they exhibit an inferiority of development, and an analogy with the embryo condition of human bones.

The vertebral column of these chelonian reptiles is moveable in the region of the neck, and in the region of the coccygeal vertebræ; in the region of the trunk and in the head the vertebræ are fixed. One of the most marked and singular characters of this order, by which it is distinguished from the other orders of reptiles, is the fixed condition of the ribs. They are perfectly immoveable, so that no motion is derived from them for respiration. The greater number indeed of these animals are surrounded as it were by a solid tube, all parts of which are perfectly immoveable, composed of the vertebral column, of the ribs, of the sternal appendices, and of the sternum itself. The vertebræ in the neck owe their remarkable form to the curvature which the neck assumes in the living state of the animal when it retracts the head by two very powerful muscles into the cavity of the carapace. It is from this sigmoid flexure of the neck that we observe the very different directions taken by the articular surfaces of the cervical vertebræ. These vertebræ, like those which compose the rest of the column, terminate for the most part in a convex surface on the lower part of the body, and a concave surface in the upper. This structure of the vertebræ passes even through the fixed vertebræ of the back, though the convexity is there very slight. We can trace it through the portions composing the sacrum; and we see it continued—this ball and socket joint—through all the coccygeal vertebræ. The four elements of the fixed dorsal vertebræ remain permanently separate, so that the body is united to the laminæ, and the laminæ to the spinous process, only by suture.

The skull of the tortoise differs remarkably from the skull of the turtle, and this difference consists chiefly in the form presented by the parietal bones. In both cases we observe the sutures to remain permanently distinct, separating all the elements of the cranial bones. These bones correspond with those of the crocodile which we saw yesterday, although varying a little in their shape, so that you have the same detached pieces. The condyle of the occipital bone in the tortoise and in the turtle (*II*) is composed distinctly of three fascits, and those three fascits belong to distinct bones; the middle and inferior one (*II*, *a*) belongs to the basilar bone, which I show you quite loose and detached in this young turtle; the two lateral fascits that enter into this skull belong to the two condyloid bones (*II*, *b*), so that the head is slipping off from the bodies of the vertebræ with which it was connected, almost solely, in fishes, and getting on to a secure attachment to the condyloid bones, which we see it retain in man and all the mammalia. But in the crocodile you observe that that single condyle belongs solely to the basilar bone, that the two condyloid bones have not yet extended far enough backwards to have a share in the formation of the occipital condyle. The median or superior portion (*II*, *c*) of the occipital bone here shoots backwards, like the long spinous processes we see in this region in fishes, and in many of the carnivorous mammalia. It gives thus an extensive and strong attachment to the muscles. Passing forwards we come to the elements of the temporal bone, and those elements remain permanently detached, being united only by suture.

II

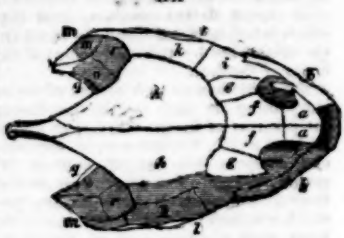


We have in the tympanic bone (*II*, *d*) of the *chelonia* a repetition of that fixed condition which we see in the tympanic bone of the crocodiles. Yet the tortoises and the turtles do not require to struggle with living prey in the way crocodiles do. What then have they this peculiar structure for,

so anomalous in reptiles, so different from fishes, amphibia, serpents, lizards, and birds? This is the fixed condition of a quadruped's jaw, not the condition of cold-blooded animals. Even birds have not this fixed condition. The turtles feed upon marine plants; they possess great force of jaws for cutting the thick and tough stems of the marine plants on which they feed. This requires then that they should have this anomalous fixed condition of all the elements of the temporal bone, and that the tympanic portion should not play freely like that of a fish, or of an amphibious animal, or of a serpent, or of a lizard, or of a bird. In the frontal bone (*KK, g f*) we see the several pieces united by permanent sutures. The parietal bones (*KK, h h*) are remarkable from the differences which they present in the land species, as contrasted with the aquatic. In the land tortoises they form an elevated, exposed, longitudinal crest, where they meet so as to resemble in this part the skull of a hyæna among the carnivorous quadrupeds, or of a badger; but in the aquatic animals these bones (*II, h*; *KK, h*) have extended laterally, and, in conjunction with the temporal, jugal, and frontal bones, have made an osseous covering on each side over the temporal muscles. You therefore observe that the exterior of the head of the turtle (*KK*) appears at first view as if it had a large cranial cavity, but the cranial cavity only occupies a small osseous tube in the middle of this great osseous development covering the muscles. That is a repetition in the turtle's head of what we see in the posterior part of its vertebral column, where the spinous processes of the dorsal vertebræ have extended laterally, so as to assist in the formation, with the ribs, of the great upper shield or carapax.

All the parts of the upper jaw are fixed in the chelonian reptiles, as they are in the crocodiles, on account of their kind of food. The upper and the lower jaws are covered with a sharp, cutting, strong, horny plate, which is particularly sharp and cutting in the upper jaw, and strong and denticulated in the lower jaw, representing, in their direction and position and uses, the dental system of many aquatic birds, and the horny laminæ of the ornithorhynchus, and those of the whales placed along the alveolar margin of the upper jaw. The margins of the jaw-bones, covered with these horny masticating instruments, are thin and sharp, and of great depth from above downwards, so that they are capable of cutting the stems of plants in order to procure food, with great force.

From this consolidated form of the osseous part of the head (*KK*) of the chelo-



nian reptiles, from this immoveable union of all the bones by sutures, from this expansion of the parietal bones over the temporal muscles, and completely over the temporal fossa, together with the expansion of the frontal bones themselves over the arch to the malar bones (*KK, i*), we observe that in the turtles the cavity of the skull occupies but a small compressed narrow passage, running through the centre of its large head. It must be very obvious from this structure, that the magnitude of the brain contained within the cavity of the skull, can here have little or no influence on the general dimensions of the head or on its outward form. This is in some respects interesting in a physiological point of view, and as concerns the remains of those animals found in the strata of the earth, or even for ascertaining the characters of existing species. You will see that it follows from this circumstance, that the bones which you here look upon as the exterior surface of the skull and around the whole head, are bones which enclose the muscles, which enclose the organs of the senses, and which, therefore, grow as those soft parts grow, and continue to grow through life like the bones of the face, and like all the rest of the skeleton. But that is not the case in animals where the surface of the skull corresponds with, and is applied to, the surface of the brain; for in such animals,—and man belongs to such a group,—at the early period of life, when the brain is proportionally very large, so also are the outward dimensions of the frontal bones, of the parietal bones, of the occipital bone. But as the brain has shot early through many of the phases of its development, being an organ much required, and one of the most important for the individual in establishing relations with surrounding nature, it is early shot forth to a high degree of development; but in after life its march is slow; and we observe that the bones of the face in such animals, pro-

ceeding in their natural march of development, soon outstrip the bones of the cranium, and then the muzzle projects, and the whole face takes on a great proportion, with regard to the cranium, from that which it had in infancy, and the facial angle diminishes by this advancing of the bones of the face.

The turtle has no such means of metamorphosing its head and its face during the progress of its growth, for, at all periods of its life, the bones which surround and compose this general outline (*II*) march forward equally in the progress of their development. Notwithstanding this, the brain itself is actually undergoing the same kind of changes as we find in the more highly developed human brain,—advancing to maturity, then its stationary condition, and then the ultimate retrograde movements of all developments back towards infancy. We observe from this, that these animals, in the young condition and in the adult condition, and even at a more advanced period of life, have the same proportions in all parts of their head and of their body. That is the case with fishes; that is the case with all the cold-blooded vertebrated animals, in all of which the brain is so imperfectly developed, that it fills but a small tube passing through the centre of the large head. This is sometimes an important consideration, even to the geologist, in determining the identity of extinct species by the magnitude and proportions of their parts. If a species were found of an extinct saurian reptile, a small animal, which had the head proportionally large when compared with the rest of the body, and this were to be contrasted with species which were already known to attain a greater size; it might naturally be imagined that this difference of the size of the head might be the effect of age; that the youth of the smaller animal caused the disproportion between the head and the rest of the body, and thus caused the difference between the newly discovered species and those already known. That would obviously be a mistake, which could only be corrected by a careful examination of the proportions and growth of those parts in the existing and known allied animals.

This structure, which we observe in the turtle, is very different from the structure which we observe in the tortoise. In the tortoise the structure of the upper and back part of the head is more nearly like that of quadrupeds, where the muscles are covered merely by fasciæ and by the integuments, and not by an osseous shield, as in the turtles. This exposed condition of the soft parts of the head in the tortoise, is less dangerous to these animals than it would be to the turtle; for the large wide skeleton of the tortoise forms a solid arched shield, below which the animal can completely retract its head and preserve it in perfect safety; as it can also its arms, its legs, and its tail; but the depressed turtles have a structure of the skeleton which renders that impossible. The very great development of the arms for swimming through the sea, and the great development of the muscles to move those powerful organs in swimming, occupy a great space in the anterior region of the carapace of the trunk. The neck also is lengthened, the head is large, but the carapace is proportionally very small; it is depressed and small in every dimension. The head cannot be retracted so as to be completely shielded within the carapace; it is protected, therefore, by an osseous covering formed chiefly by the parietal bones, similar to that formed by the spinous processes and the ribs (*HH*), which we see covering the whole of the rest of the back. We observe the nostrils passing backwards horizontally, and terminating about the middle of the palate, in two distinct wide round orifices; through these the air passes in respiration, but the respiration is effected here chiefly by the motion of the large and strong *os hyoides*.

I have already mentioned to you with reference to these chelonian reptiles, these turtles and tortoises, that they can derive no assistance from motions of the ribs in the act of respiration; so that they are, with their enormously developed ribs, nearly in the predicament of frogs, that have no ribs whatever. In both cases we observe the respiration to be effected chiefly by a constant motion of the os hyoides, which acts as a piston to draw in air, and the tongue acts as a valve, closing the posterior nasal apertures, and forcing the air downwards through the trachea that opens at the root of the tongue. Hence the necessity for this great development of the hyoid bone to give attachment to those numerous muscles which are necessary for the important motions of that bone in respiration.

The ribs (*HH*) of the tortoise are in number eight upon each side, but the first and the last ribs are very broad, and have each two transverse processes attached to them, as if they were double ribs. These eight pairs of ribs form, by their junction, by sutures, the upper solid shield, which is called the carapace. These ribs, distinctly bounded by their sutures, do not correspond in the least in their outline with the outline of the large horny scales that are seen covering the bones with their periosteum, and skin, externally.

The ribs of animals have two principal modes and points of attachment to the vertebræ. In the one mode where great freedom of motion is required, we find them articulated to the extremities of the transverse processes,—as we see them in fishes, as we see them in the perennibranchiate amphibia, as we see in serpents, as we see for the most part in porpoises, in grampuses, and in many other cetaceous animals. But there is another kind of attachment, where freedom of motion is not to be desired, but great security and firmness of the articulation; in that case they are, as it were, pushed down from the transverse processes to the intervening spaces, so as to touch and unite with the bodies of two separate vertebræ, and have thereby a secure attachment.

It must be obvious to you, that if the ribs are to form, as it were, a solid shell to resist great pressure, and to envelop the whole body of the tortoises and the turtles, that they require such an attachment as shall obtain the greatest degree of security in the articulation. We observe, therefore, that their ribs pass inwards to be attached each between two vertebræ, so that one rib is united by suture to the body of the vertebra above and the body of the next vertebra below. These ribs extend outwards, nearly parallel to each other in their line of junction, expanding a little toward their distal margin. These ribs unite with each other also by sutures. From the flatness and arched form of these bones, and from the sutures which bind them anteriorly and posteriorly, they have been mistaken for parts of the human skull. And from the great magnitude of these bones, it was natural to imagine that such a skull must have belonged to a human being of enormous size—an antediluvian giant.

In the land tortoises these ribs pass forward ossified, united by suture to their anterior or ventral termination; not tapering, you will observe, to a point, as they do in the turtles (*HH*), but continuing broad and much arched to their anterior termination; and they terminate anteriorly by a suture which connects them to other rib-like bones in the land tortoises, which are the sternal ribs. We observe, that although the ribs themselves are immoveable in the aquatic as well as the land animals of this order, that there are osseous parts surrounding the trunk of the body, which have a motion upon each other. We observe, notwithstanding the ribs are fixed, that in the aquatic species they do, by their imperfect ossification at their free terminations, where they unite with the sternal appendices, assist in the mobility of the plastron or sternum. In the aquatic species the ribs (*HH*) have begun the march of their development at their vertebral extremities in the same manner as in the land animals; but after a time they have ceased to meet each other at their margins, and to be joined by sutures, and have shot out a narrow rib-like process, resembling the ribs of mammalia, which is continued on to the edge of the sternal appendices. You see, therefore, the limits and forms of the eight pairs of ribs, as in the specimen before you, most distinctly defined in the aquatic species. There is here much less confusion arising from the junction of the ribs with each other throughout their whole extent, than there is in the land animals where this takes place.

Extending downwards from the termination of the ribs to join the plastron or sternum beneath, or the anterior shield, we observe that these sternal appendices are ossified. In the land animals the sternal appendices are so extensively developed and ossified as to meet each other, and to unite by suture—to meet the ends of the ribs, and unite with them by sutures, and to articulate with the parts of the sternum also by sutures; so that the whole trunk of the body is thus surrounded by a tube of solid bone in the land animals.

In the aquatic species, as you can perceive by this very large and beautiful skeleton of the turtle, presented to me by Dr. Reilly of Bristol, the ossification has not gone on to that extent, but the ribs have ceased to develop so much in breadth, before they have reached the sternal appendices. The sternal appendices (*HH, k*) are, in the same manner, throughout the whole side of the carapace, partially detached from the ribs. Looking near the point of junction between the ribs and the vertebral column, we observe on the outer part of the skeleton large expanded pieces running in a median chain, from the anterior to the posterior part. These expanded bones correspond with the expanded form of the parietal bones in the skull of the aquatic species. In the skull we observe that the parietal bones expand laterally, so as to cover the temporal muscles. The parietal bones form spinous processes to the cranial vertebræ, just as we see that the median or superior portion of the occipital bone, is the spinous process to the posterior cranial vertebræ. These developed spinous processes, therefore, which we here see extending backwards along the whole median plane on the back of the tortoise and the turtle, only constitute a repetition of that structure which we have already seen in the skull. Nature will vary the forms, the

magnitude, the proportions, in every respect, of elements which are common to all forms of animals that have vertebræ, rather than introduce anything new or anomalous, which there would be no getting rid of, without a confused break, or sudden transition in her operations, which we never witness in the construction and development of animal forms—an abrupt transition to something entirely new.

The sternal appendices thus passing downwards from the anterior termination of the ribs, meet with numerous bones composing the lower shield—the *plastron* (*LL*), as it is called, which covers all the abdominal surface of the tortoise. That abdominal shield is composed of several pieces, as you will observe from this large skeleton of the Indian tortoise—pieces that here all meet each other, and unite by sutures (*LL, Fig.* 1) These sutures traverse it in various directions, so as to isolate, and show the limits of, a number of bones. They seem to be disposed for the most part in pairs, for you will observe that there is an upper pair, and then there follow two large bones on each side forming another pair; then there follows a second large pair, forming three pairs; and, last of all, they terminate with a posterior pair. Four pairs of bones, including however one towards the anterior part, an isolated median bone—an azygus bone.

LL

The bones which you thus observe covering the abdominal surface of the tortoise are in contact with the extremities of the sternal appendices, and they cover the whole surface of the anterior part of the body. They are obviously, therefore, the bones of the sternum that have assumed this form, arrangement, and great development.

When we compare these bones in the land species of tortoise (*LL, Fig.* 1), with those of the turtles (*LL, Fig.* 2) that inhabit the sea, we observe that the number of bones is the same, although their form differs remarkably in the two tribes, and they differ in almost every genus. In the land species they unite everywhere by sutures with each other, and with the sternal appendices, so as to admit of no motion whatever. They unite with the sternal appendices by sutures, and these unite immoveably with the ribs—the ribs with the vertebral column, and the vertebræ immoveably with each other, so that there is a solid circle of bone, no part of which admits of motion in the land animals. But in the aquatic animals the sternal appendices (*HH*), or sternal ribs, are moveable upon each other, and upon the extremities of the vertebral ribs. They join with the pieces of the sternum in such a way, as to admit of motion again upon the pieces of the sternum. Nay, the pieces of the sternum themselves (*LL, Fig.* 2) admit of motion upon each other in these aquatic species.

The sternum is here a very important bone in the chelonian reptiles, serving for the attachment of the coracoid bones and of numerous muscles, shielding anteriorly all the most important organs of the body, and acquiring such a magnitude in all its elements that it deserves the attentive consideration of the anatomist who wishes to prosecute in a philosophic manner the study of the osteology of these animals, whether with regard to the analogies of these bones in the vertebrated tribes, or to the existing forms of tortoises and turtles, with a view to comprehending the kinds of species which are presented to us in a fossilized state. The bones are the parts which are presented to us in the strata of the earth, and not the exterior scales of the internal soft parts, therefore the consideration of these solid parts is particularly interesting, with a view even to extinct forms; it is consequently necessary for the sake of perspicuity to give distinct names to these important elements that we thus see so largely developed in the sternum of the *chelonia*.

Names have been given to these parts by Geoffroy St.-Hilaire, which express their most frequent relative positions. The upper two pieces which bound the sternum anteriorly, placed, as you now see, upon the other pieces of the sternum, are called the *episternal* pieces (*LL, Figs.* 1, 2, *a a*). Beneath these episternal pieces upon each side, continuing downwards to about the middle of the sternum in the land species, are two large bones or elements, which have been called *hyosternal* pieces (*LL, Figs.* 1, 2, *c c*). Surrounded by these four bones I have mentioned, two upon each side, you observe the median piece completely enclosed, and it is the only piece which traverses the median plane; it is very well named *entosternal* (*LL, Figs.* 1, 2, *b b*). Beneath the two hyosternal pieces, which are large, you observe two other large bones; these are placed further back than the two hyosternal pieces; they are the *hyposternal* pieces (*LL, Figs.* 1, 2, *d d*). We observe the sternum to terminate behind, or posteriorly, in two pointed pieces, which occupy, therefore, the place of the xiphoid carti-

lage in the human sternum; these have been called the *xipho-sternal* pieces (*LL, Figs.* 1, 2, *e e*). They are double, as you observe, like the others, or in pairs. Thus we have got nine very distinct elements in the sternum of the chelonian reptiles. We shall not come to any tribe of animals, nor have we yet passsed through any tribe, where you can more satisfactorily study the composition and the mechanism of the sternum of vertebrated animals than in those we are now upon. I have already shown you those elements in much larger animals, but not nearly so distinctly as we have them now placed before us. Familiarising yourselves, therefore, with the various forms and the names expressive of those elements, you can comprehend the changes of form which the sternum of animals assumes much more readily than if you only had in your mind a vague conception that the sternum was an aggregate of numerous pieces of bone unsymmetrically collected together; for if we observe the sternum of the bird, we find that there is an osseous protection to the anterior part of the trunk, which is chiefly composed of one bone—of one element of this complicated sternum,—the other elements being exceedingly small in birds, and placed around this piece. It is the *ento-sternal* piece that composes the greater part of the sternum in birds. The ento-sternal piece is the only element of the sternum upon the median plane. It is better for the security and strength of the articulation, to develop a piece like this,—which is, normally, undivided, not separated in the middle by suture,—than to develop pieces that are always separated on the median plane by sutures; for if that had been the case with birds, the force of their enormous pectoral muscles, acting upon the sutures which we may suppose to have divided the sternum, would have divided the sternum and torn the body open, in place of forcing down the humerus for the purpose of flight. These relations are in themselves beautiful adaptations, and they serve to point out a universal truth, that there is no part of nature—no part in the mechanism of animals, where the structure could possibly have been otherwise than just as it is without being defective; that whatever is is best in animal mechanics.

In the aquatic species of the chelonia we find these elements the same in number and in their relative positions, but in their form they are very different from those of the land tortoises. In the turtles the two *episternal* pieces (*LL, Fig.* 2, *a a*) unite upon the median plane, but they taper downwards upon each side to a point. Between these curved portions in the turtle, you observe extending downwards a triangular piece of a lengthened form; it is obviously the *entosternal* piece (*LL, Fig.* 2, *b*). It is partly surrounded by the two episternal pieces that hang over it, and partly encompassed by the two *hyosternal pieces* (*LL, Fig.* 2, *c c*). I shall put these detached pieces into their relative positions, before you, that you may see exactly the figure which they form and the interstices they leave to be occupied by membrane.

In the turtle, the two hyosternal pieces (*LL, Fig.* 2, *c c*), in place of meeting by suture with each other on the median plane, meet by two prominent processes; so that there is a great interval between them, covered only by membrane and by the moveable integuments, and also by the scales that cover the whole exterior of the body. But above they are removed from the entosternal piece; they are detached also from the two episternal pieces. We observe that the two hyo and the two hyposternal pieces, unite—the *hyosternal* (*LL, Fig.* 2, *c c*) with the *hyposternal* (*LL, Fig.* 2, *d d*) —by suture most frequently, even where the rest of the circumference of these bones is the most radiated and free, so as to leave the largest space between them and around them to be occupied by soft membrane, integuments, and scales.

You will observe, therefore, that in the two bones I hold in my hand, the two hyposternal bones, their upper margin is serrated to form a suture with the bones above, and it is the only margin which they present thus serrated. The two hyosternal bones have their lower margin serrated, and these are their only margins which are thus serrated—the only sutures or fixed articulations in the whole of the sternum (*LL, Fig.* 2) in this aquatic animal, the turtle. These two hyposternal pieces of the turtle shoot out radiations or long digitations which prevent their meeting by an immoveable suture—and they allow of free motion by means of the soft parts that connect and surround them except upon the upper margin, where they are fixed by suture. The two *xiphisternal* pieces (*LL, Fig.* 2, *e e*) which are so large in the land animals, are in the aquatic species narrow, lengthened, moveable bones, tapering to a very small point, and terminating in cartilaginous extremities behind. They are articulated in a moveable manner with the two hyposternal pieces. From the loose attachment with each other, and from the imperfect development of these nine pieces of the sternum and also the sternal ribs, in the aquatic species of chelonia, you perceive by what kind of mechanism they are enabled to move al-

together this loose and disjointed part of the parietes of the abdomen in the act of respiration, while the ribs themselves behind are perfectly immoveable.

Thus then we see that the tortoise has nothing in all this large solid osseous case that encompasses its body, which is not in our own skeleton, and that of most vertebrata. Nature can transform the outward appearance of common elements of structure in a great variety of ways to suit the living conditions of animals, without once deviating from a general fixed plan, or requiring to produce anything new for every new circumstance in the living condition of the species. The elements which I have been speaking of, in the sternum of those animals, exist at an early period even in the human sternum. In the chelonia these elements are spread out laterally, for the obvious reason as you perceive, to form a shield over the whole abdominal surface of the short and broad trunk of their body (*HH*). In quadrupeds, where the trunk of the body has a lengthened cylindrical form, these elements are spun out in a single continuous chain, and you find them not surrounding the entosternal piece, as in the *chelonia*, and as in the birds, but placed in succession, the one behind the other.

Thus then we find that the tortoise is somewhat in the condition of the invertebrated tribes of animals, with its solid protecting skeleton thrown out in great part upon the exterior of the muscles and soft parts; and its intellectual development, as in the invertebrated tribes, in so low a stage, and its muscular energy so feeble, as to require this mechanical protection against the dangers which incessantly surround them.

This outward solid shield encompasses also the bones of the pelvis, and it encompasses completely the scapular bones, and even the head of the humerus and of the femur. We observe, extending from the sides of the first dorsal vertebra laterally, two cylindrical bones (*MM, Fig.* 1, *b b*); these cylindrical bones expand and enlarge as they approach to the head of the humerus (*HH, d*), and then direct their course downwards, and towards the median plane, so that they touch and unite internally with a prominent crest of the entosternal piece on the inner surface. The bones that thus pass outwards towards the head of the humerus, from the side of the vertebral column, from the sides of the anterior dorsal vertebra, you understand by that very description, must be the two *scapulæ* (*HH, a a*; *MM, Fig.* 1, *b b*). That is their ordinary position in the vertebrata, whether in the interior or on the exterior of the ribs; but they terminate in a bone (*HH, b b*; *MM, Fig.* 1, *a a*) continuous with themselves, which shoots downwards to be attached to the entosternal piece. Extending downwards from the scapula is this bone, which is attached by articulating cartilage and ligaments to the sternum; it is a process of the scapula, and must therefore be the coracoid process, or the *coracoid* bone. We have generally called it the *coracoid bone*, and not the *coracoid process*, because of its importance, its magnitude, and its being so frequently a detached bone in the lower tribes of vertebrata; but we know how insignificant a process it is, where it is least required in man and in the mammalia. It is an enormous bone, far exceeding in magnitude and importance the whole of the scapula, in the class of birds.

I hold these two scapular bones by two extended flat pieces (*MM, Fig.* 1, *c c*), which are detached from the other two bones that I have mentioned, distinctly by a suture. They enter also into the formation of the glenoid cavity for the head of the humerus. They are connected with the scapula; they are articulated to, but not anchylosed to, the scapula. Passing from the scapula towards the median plane, we see these detached bones to be distinctly analogous to the two clavicles (*HH, c c*; *MM, Fig.* 1, *c c*). In the turtle, and in the other aquatic chelonia, they extend considerably towards the posterior part of the body. Thus we have in this scapular apparatus the ordinary three bones of the shoulder, and as usual they all contribute to form the glenoid cavity. The clavicles have here much more the broad and flat form of scapulæ generally than actually the two scapular bones themselves, which are more like clavicles in their long, narrow, cylindrical form, but all the connexions and uses of these three bones forming the scapular arch of the *chelonia* point out their true nature and their analogies.

We observe attached to the sides of the sacrum, which is slightly moveable upon the rest of the vertebral column in the chelonia (the sacrum playing upon the last fixed dorsal vertebra by a ball-and-socket joint)—we observe, extending outwards and downwards, two cylindrical bones (*HH, l*; *MM, Fig.* 2, *b b*) from the side of the *sacrum* (*MM, Fig.* 2, *e*), to which they are attached by a cartilaginous union. We have thus obviously the two *iliac* bones in their ordinary position. These iliac bones we observe extending

forward to the cotyloid cavity. On looking into the cotyloid cavity (*MM, Fig.* 2, *d*), we distinctly perceive it is formed by the junction of three bones, the lines of separation of which are particularly obvious, traversing this cavity. One of these bones (*MM, Fig.* 2, *c c*), forming part of the cotyloid cavity (*MM, Fig.* 2, *d*), extends forwards, and meets with the other of the opposite side on the median plane, where it touches the inner surface of the sternum; these are the two *ossa ichii* (*HH, m; MM, Fig.* 2, *c c*). The other free, expanded bones (*MM, Fig.* 2, *a a*) meeting anteriorly, generally concave anteriorly, convex inwards, are the ordinary *ossa pubis* in their normal position, with relation to the other bones of the pelvis. Thus we have the pelvis of these singular animals, though placed within the ribs and sternum, composed of the ordinary three bones, the *ossa ischii*, the *iliac bones*, and the *pubic* bones.

Rising upwards from the anterior margin of the pubic bones, you observe two long expanded processes. I now hold these specimens by those processes. These, you perceive, are in the position of the detached marsupial bones. There are detached bones in that position in crocodiles, and in marsupial and monotrematous quadrupeds.

The humerus (*HH, d*) is generally a very strong bone, both in the land animals and in the aquatic species. In the land animals it has a twisted form, giving a greater range of motion to the hands, and by which the animal, when thrown accidentally upon its back and extending the arms backwards towards the ground, is enabled more easily to reach it. Were the humerus not thus bent in the land tortoise, it would often perish from the want of the means of turning itself over upon its abdominal surface. Were you not to see the animal in the act of employing in various ways this twisted humerus, you might think its bent form was the result of rickets, mollities ossium, or some other disease. It is a very large bone in the aquatic species, much larger than the femur, because the arms in the aquatic species are much larger than the legs, and more powerful and important members for the motions of swimming. The radius and the ulna are placed widely apart, and admit of very little pronation and supination in any of the species. The arms are fixed in the tortoise in a state of pronation, to strengthen them for the support of the heavy trunk. The whole of the bones of the carpus are confined in the land species to a narrow space, and have mostly a compressed form and very limited motion. In the land species they are more compressed and fixed, and form more secure articulations than in the aquatic species, which require more free motion. The bones of the carpus (*HH, g*) in the hands of the turtle, by their expanded form, contribute to make the hand more in the form of a flat fin for swimming through the sea. The land animals are remarkable for their short trunkated hands and feet,—the great strength of the bones of their anterior and posterior extremities, and their little mobility. They are the more capable, however, like the legs of the huge elephants, of resisting enormous pressure; they are capable of digging against great and solid resistance, and many of those animals we know to burrow in the earth; they have to support their own massive carcass, and sometimes the trampling of heavy herbivorous quadrupeds.

The femur (*HH, m*) is a very strong and short bone, very broad at its upper and lower part where it expands in the tortoise. It is a shorter bone than the humerus, both in the land and the aquatic species. Formed like the femur of quadrupeds, it has a large distinct head; the neck very distinct, though short, the *trochanter major* ascending higher than the head of the femur, as you know to be common in the quadrupeds. Like the other long bones of the chelonia, it has a spongy cancellated internal structure throughout its whole extent, and has no distinct cavity in its middle part for containing marrow; this is the common internal structure of the long bones of reptiles. The tibia and fibula (*HH, n o*) are united in such a manner as to admit of little rotation or supination either upon the femur or the astragalus.

The astragalus which supports these bones is a large bone, because of the pressure and the resistance which it often has to oppose. The bones of the tarsus, like those of the carpus in the land animals, occupy but a small space in the very short club-shaped or truncated foot, and are compressed in their form. The metacarpal bones and the phalanges of the fingers are short in the land animals, but of a very lengthened form in the aquatic (*HH, h*). The phalanges are much less developed in the posterior extremities than on the anterior, which are the organs chiefly employed in swimming, or which give most assistance in progressive motion in the aquatic species, wherein they approach in structure to the hands of the cetaceous mammalia.

We have thus the same osseous elements in the skeletons of these chelonian reptiles which we have in the other orders of reptiles, but developed in such a manner as to present an outward appearance very dif-

ferent from that which we see in any other cold-blooded animal, or in any other vertebrated animal. We see modifications introduced by the imperfect or excessive development of certain elements of structure which affect in an important manner, not only the outward form of the whole body, but the kinds of motions of the skeleton, and the most important functions and living habits of the species.

Thus, then, we have concluded what relates to the skeletons of the cold-blooded vertebrated animals. We have still seen throughout these skeletons, even of the tortoises and the turtles, that the bones, as in the inferior classes, have a large proportion of animal matter in their composition; that they have a coarse fibrous texture; that they have not yet cavities developed within, continuous tubular canals, either for marrow or for atmospheric air, but possess only a uniform spongy texture throughout their whole interior substance. These are analogies which they present with the earlier condition of human bones before the cavities for the marrow are formed in our bones. We still observe that the elements of the various bones, or the centres of ossification, continue to be permanently detached, but there is an obvious approach towards their complete union and anchylosis, which takes place always in higher classes. We cannot look at this solid osseous shield covering the head of the turtle, and contrast it with the moveable bones which we see composing the heads of serpents and lizards, without perceiving an obvious and near approach towards the formation of a solid anchylosed arch over the whole of the upper part of the head. That is what we meet with in its most perfect degree in the next class of animals—the class of birds. We even observe in the fixed condition, by means of suture of the tympanic element of the temporal bone in the crocodiles and chelonia, an approach towards the union by anchylosis of all the elements of the temporal bone, for the next step to be effected by the progress of ossification would be to unite the tympanic element with the squamous, the squamous with the mastoid, and the tympanic with the petrous portion, and then we should have the anchylosis of all the elements, as in the human temporal bone, and so with other parts of the vertebral column, and other parts of the skeleton.

Thus there is a transition through these cold-blooded animals to that system of anchylosis of osseous elements, the laws of which are so mysterious and so incomprehensible. It is a phenomenon—unexplained in the human skull, and in the skulls of quadrupeds,—that those detached elements of bones which we have hitherto looked upon in the lowest classes of vertebrata as distinct, perfectly moveable bones, and even but loosely meeting each other, shall in the class of quadrupeds and in the human skull be aggregated together according to certain regular and definite and that those aggregates shall compose almost invariably the same groups which we designate in our own skeleton by the names of single bones. We almost forget when we are using, in reference to quadrupeds and the human skull, such language as the temporal bone, the occipital bone, the sphenoid bone, the frontal bone, and so on, that we are speaking of numerous aggregated bones that have, after a long series of changes and developments, come at last to be united only in the highest forms of vertebrated animals, according to definite though unexplained laws, and in determinate portions of the skeleton. And examining with the minutest scrutiny the forms and the conditions of the osseous elements of the oldest vertebrated skeletons, embalmed for our contemplation in ancient secondary strata, we see not only that these laws are uniform in all the varieties of organization, but that they have continued invariable from the first development of vertebrated animals upon the earth, like the laws which regulate the motions of the earth itself, and all the phenomena of the material world.

CASES OF

PUERPERAL CONVULSIONS.

By J. SYMONDS, *Esq., Surgeon to the Oxford Medical Dispensary, &c.*

THOUGH the nature and treatment of puerperal convulsions are, I should hope, pretty generally understood, yet perhaps the following communication on the subject will not be altogether devoid of interest or instruction to such of the readers of THE LANCET, as have not had an opportunity of becoming practically acquainted with this fearful malady. I shall first give a brief recital of four cases which terminated favourably under the treatment adopted in each, and then I shall subjoin a few general observations of a practical kind.

CASE 1.—Of the particulars of this case, which occurred upwards of twenty years ago, I have unfortunately lost the memoranda, but I have a very lively recollection of the principal circumstances connected with it.

I remember being called about ten o'clock in the forenoon to Mrs. T., aged about twenty-five, who was labouring under convulsions of the epileptic puerperal kind. She was rather more than seven months advanced in pregnancy of her second child. I lost no time in opening a vein in the arm, and I drew nearly twenty ounces of blood. With some difficulty she was made to swallow a dose of musk in a liquid form, and, as soon as a warm-bath could be prepared, she was placed in it. I recollect, that while in the water Mrs. T. had a severe convulsion, but there was no recurrence of the fits after her removal from the bath, though she continued for two or three hours in a state of insensibility. A brisk purgative was administered, and she recovered gradually from the stupor in which the convulsions had left her. About four days after the seizure, and *not till then*, symptoms of labour came on, when my patient was delivered of a still-born child, without the supervention of any untoward occurrence either during or subsequent to parturition.

Case 2.—June 24th, 1824, I was summoned about nine o'clock in the morning to Mrs. E., aged 25, who had been married about twelve months, and was then rather more than six months advanced in pregnancy. She had miscarried three or four months after her marriage. I found her lying across the bed, labouring under a severe convulsive effort, affecting the whole frame, and occasioning, as usual, a frightful distortion of the countenance, which was marked by a strong purple suffusion. The pulse was full, hard, and rapid. As in the preceding case, I opened a vein in the arm with as little delay as possible, and took away, in a full stream, thirty-six ounces of blood. I then introduced, with some difficulty, a powder composed of ten grains of calomel and three of opium, mixed with a little sugar and water, which, after much resistance, was at length swallowed. The hair was cut off as closely as circumstances would allow, and linen cloths dipped in vinegar and water were applied to the head. Soon after the bleeding there was a more distinct intermission betwixt the convulsive struggles, than had previously been the case, though these continued, with somewhat mitigated violence, to recur every thirty or forty minutes, till towards five o'clock in the afternoon, when Mrs. E. was with considerable difficulty lifted into the warm-bath, after remaining in which about half an hour, the convulsions ceased, and returned no more. In the course of the day two or three doses of sulphate of magnesia, dissolved in infusion of senna, were administered, which, aided by an enema, succeeded towards evening in procuring one or two copious evacuations, and these were followed by several others in the course of the night. Soon after my patient had been removed from the warm-bath, a blister was applied to the nape of the neck. During the intervals between the convulsive paroxysms, and for a short time after their cessation, she remained in a comatose and perfectly insensible condition. The first symptoms of returning sensibility manifested themselves about seven o'clock in the evening, when she looked about her, and appeared to have some indistinct recognition of myself and one or two other persons who were in attendance upon her.

On visiting my patient, the following morning (25th instant), I learned that she had passed a tolerably quiet night, and I perceived that she had so far recovered her consciousness as to reply to the few questions I put to her, though not without effort and apparent reluctance. The skin was cool and moist, the pulse soft and regular, and not exceeding 80 in a minute. She complained of severe pain of the head, which I attributed in part (how far rightly I will not say) to the large dose of opium she had taken the preceding day. In the evening the pulse had got up to 90, was full and hard, the skin was hot and dry, and she complained of pain of the limbs as well as of the head. I bled her again to the extent of eighteen or twenty ounces. The blood was cupped and sizy, which was not the case in the former bleeding. A saline diaphoretic medicine, with nitre and antimony, was ordered to be given every four hours.

On the 26th I found that the febrile symptoms had much abated, and that the pain of the head was greatly relieved, though not entirely removed. From this time the case proceeded favourably. On the 30th instant, and not before, symptoms of labour came on, and a still-born fœtus was expelled without much effort or difficulty, as was also the placenta. Mrs. E. continued to recover without any adverse occurrence, and before a very long time had elapsed, she was restored to nearly her usual state of health and vigour.

Case 3.—Mrs. N., aged 40, November 5, 1833, was delivered, about eight o'clock in the morning of her seventh child, after a tedious and painful labour, which, however, was not attended with any dangerous or preternatural symptom. She had, for a few weeks previous to her accouchement, been troubled with pain of the head and drowsiness, a circumstance of which I was not at the time apprized. Between three

and four o'clock in the afternoon I was sent for in great haste, with a report that my patient was dying. Before I could reach her bedside she had recovered from the attack, the precise nature of which I could not collect from those around her, but after waiting a short time, a true puerperal convulsion made its ghastly appearance. I immediately took away sixteen or eighteen ounces of blood from the arm. The pulse though rapid was not so full and tense as in the preceding case. I next gave her fifteen grains of calomel, cut off her hair, and ordered cold applications to the head. A blister was applied to the nape of the neck, and sinapisms to the legs and epigastric region. On visiting her again between nine and ten in the evening, I was informed that the convulsions had continued to recur nearly every twenty or thirty minutes. On applying the ligature afresh to the arm, I was able to draw from the same orifice, without making another incision, fourteen ounces more of blood. I administered another dose of calomel (10 grains), which was directed to be assisted by a turpentine enemata as soon as that could be prepared. This, however, was delayed, much to my regret, till the following morning, when it produced several copious evacuations, which did not exhibit any unusual appearance. I wished much to have had recourse to the warm-bath, but this, circumstances rendered all but impracticable. The convulsions continued through the night, with more or less violence, till betwixt four or five o'clock in the morning, when they ceased altogether. On visiting her about nine o'clock in the morning, I found her in a lethargic insensible state, from which condition she soon afterwards began to recover; and when my son called on her in the afternoon of the same day (the 6th instant) she was perfectly collected, and expressed her gratitude in very feeling terms for the attention we had bestowed on her case. She remained for some time in a feeble, debilitated condition, and complained of a troublesome cough, which I believe had harassed her for some time previous to her confinement. This, however, gradually left her; her strength was by degrees recruited, and she is now as well as usual.

Case 4.—Mrs. P., ætat. 26, was delivered Nov. 25, 1833, of her second child. The midwife who attended her described the labour as tedious, but in every respect natural. Late in the evening of the same day convulsions came on, which continued during the ensuing night, but it was not till eight o'clock the next morning (the 26th instant) that I was requested to visit her. Prevented by other engagements from complying immediately with the summons, I sent my son over to her, for she resided at a village situated at a short distance from Oxford. He found her agitated with puerperal convulsions to an alarming degree. He proceeded immediately to open a vein in the arm, and took away upwards of twenty ounces of blood. Fifteen grains of calomel were placed on the tongue, and washed down with a little gruel; and three grains more were ordered to be repeated every two or three hours till it had produced free alvine evacuations. A blister was applied to the nape of the neck, and sinapisms also to the legs and to the epigastric region. On visiting her on the afternoon and evening of the same day, as the convulsions were perceived to hold on with nearly undiminished urgency, thirty ounces more of blood were abstracted, as in the preceding case, from the same orifice which had been opened in the morning, and as no effect on the bowels had been obtained, one or two drops of croton oil were added to one of the calomel powders, and given before I left the house. A turpentine enema was directed to be administered, but before this could be done, a very free catharsis took place, which superseded the necessity of using it. The warm-bath was in this case also pretty much out of the question.

The convulsive struggles recurred more or less through the next day, the 27th, though with mitigated violence, nor did they entirely subside till the morning of the 28th, when she first discovered signs of consciousness, and uttered a few syllables in an indistinct manner. Towards the middle of the same day, her sensibility was fully restored, and she was able to converse with all the warmth and volubility characteristic of those who are natives of the Emerald Isle, for she was by birth an Hibernian. In consequence of exerting herself imprudently in this way, she became unduly excited, and passed a very restless night, and the next day, the 29th, the cerebral functions were evidently disturbed, as evinced by the expression of the eyes, and her rambling incoherent mode of expressing herself. Eight ounces more of blood were taken away, which exhibited a cupped and sizy appearance; blisters were applied behind the ears, and the cold applications to the head continued. One grain of opium and one of camphor, in pills, washed down with a cordial saline mixture, were ordered to be taken every four hours till the delirium and watchfulness had subsided. Under this treatment, every unfavourable symptom vanished, and her recovery proceeded without any material interruption.

Remarks.

The pathological conditions which prevail in the system, when under the influence of this disease, are, a high state of nervous excitement, and a marked determination of blood to the brain. This latter may be in part the result of general plethora, or of that vascular excitement which is more or less attendant on pregnancy; but each of these conditions is mainly produced by irritation primarily seated in the abdominal viscera, and in the uterine system more particularly. The indication of cure will, it is obvious, be that of removing these morbid conditions; and experience has sufficiently attested, that the remedial agents best adapted to fulfil this indication, are, copious venesection, free purgation, cold applications to the head, a blister to the nape of the neck, and the use of the warm-bath. The exhibition of opium, musk, and camphor, is of more doubtful expediency, and should not be resorted to till the remedies first enumerated have been fairly brought into operation. The fortunate result of these cases I believe to have been in a great measure attributable, at least as far as human means are concerned, to the circumstance of my having persisted in administering with my own hands most of the remedies which were employed. There are, comparatively, few nurses, especially amongst those usually attending on patients belonging to the lower grades of society, who have tact and resolution to overcome the difficulty which presents itself in cases like these, to the introduction of medicines into the stomach. Disheartened by the apparent hopelessness of the case, they are content to leave the patient to her fate, and, in excuse for their non-compliance with the injunctions laid upon them, they will coolly tell one, in the parlance common on such occasions, "It is a pity to terrify the poor cratur any longer." I would earnestly recommend to my younger brethren in the profession, to persevere, notwithstanding the discouraging condition of the patient, in bringing to bear every means which are calculated to restore the unhappy sufferer; and they may be assured that in the majority of instances the issue will be favourable. Nothing could, to all appearance, be more desperate than the condition of three of the patients whose cases I have described, and yet they recovered, and are now living in the enjoyment of very tolerable health. The expedient which I have found most availing in those cases in which the patient has made much resistance to the administration of medicine, has been to introduce the bowl of a spoon between the teeth, and far enough into the mouth to keep down the motions of the tongue. Along the hollow of this domestic implement, medicaments, either in the form of powder or liquid, or even pills, may be conveyed into the stomach.

The history of these cases will, I think, be allowed to throw some light on a point in the treatment of puerperal convulsions, concerning which a diversity of opinion has been entertained. I mean the question of forcible delivery, or of using any means to expedite the expulsion of the contents of the uterus. It will be seen that in two of my patients the convulsions were subdued before labour came on, and that in the other two the seizure was subsequent to delivery. Instructed by my own experience, and fortified by the authority of such writers as Denman, Blundell, and Gooch, I should say with the latter—"Take care of the convulsions, and let the uterus take care of itself."

Oxford, Jan. 1834.

ON THE PRECISE NATURE OF THE

MOVEMENTS OF THE HEART,

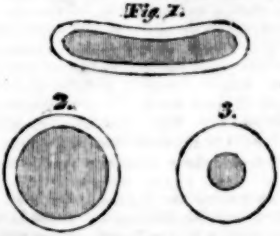
And on the Function of the Muscular Bands contained in its Cavities.

By E. L. BRYAN, *Esq., Surgeon, Stowmarket.*

As the heart consists of two sets of hollow muscles, alternately dilated by, and contracting upon, the blood, the investigation of its action necessarily requires some previous consideration of the physical state of hollow bodies distended by, or contracting upon, a fluid.

Let *Fig.* 1 represent the section of a

Fig. 1.

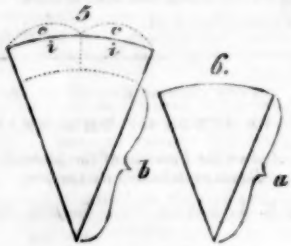


hollow muscle in a state of relaxation, and having parietes of equal thickness throughout. By a well-known law of physics it would, when distended by fluid, assume a spherical form, *Fig* 2, and in contracting and expelling a portion of its contents, it

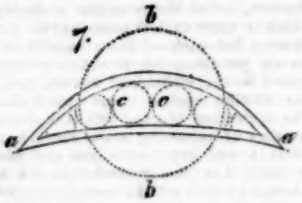
would, of course, become a smaller sphere, as *Fig.* 3.

For the sake of elucidation, let us conceive a heart of the above simple construction. Let *a*, *Fig.* 4, represent the ventricles; *b*, the auricles. The ventricles, *a*, in contracting, would become a smaller sphere, as *c*, and, consequently, the parts in contact with their outer surface would be alternately dragged into, and pushed from, the space *i i*, at each systole and diastole. Similar phenomena would attend the action of the auricles. The parts in contact with such a heart would be injured by its movements.

Let the strong lines *Fig.* 5 represent the outline of a hollow, distended, muscular cone. In contracting, it would become a smaller cone, as *Fig.* 6. It is evident that the whole surface, *a*, of the lessened cone would be exactly adapted for the space *b*, previously occupied by the lower portion of the cone in its distended state; and if auricles were situated at the base, as *c c*, they might, by distending in proportion as the ventricles contracted, fill the space *i i*, from which the base of the cone had receded. From this it may be seen, that conical ventricles, with auricles at their base, might contract powerfully without altering the form of the pericardium containing them, and, consequently, without agitation of the surrounding parts.



I would here wish the reader to consider what might determine the form of a hollow body during its distention by, or contraction upon, a fluid. Suppose that *a a*, *Fig.* 7, represents the section of a hollow muscle containing a fluid. When contracting upon its contents, it would (as explained in connexion with *Figs.* 1, 2, 3) spring into the spherical form, as *b b*; but if it possessed bands stretched across its cavity, as *c c*, &c., it might, during distention and contraction, retain its original form. Different modifications in the power and arrangement of similar bands might determine in a hollow muscle any required form during distention, and any required alteration of that form during its contraction.



Then because a conical heart can act without agitation, nature has moulded the ventricles as nearly to the form of a cone as the surrounding viscera will allow without waste of space, and has made up for a slight deviation in this respect, by the addition of internal muscular bands, which afford to the ventricles those properties which, without internal bands, the perfect cone alone possesses. The shape of the auricles being of secondary importance, they are so constructed as readily to adapt themselves to the varying form of the parts in contact with them; and as the shape of their loose portions, the appendices, is extremely irregular, numerous internal bands become indispensable to their smooth and tranquil action. These muscular bands of the auricles and ventricles have much engaged the attention of physiologists, and various and unsatisfactory have been their opinions concerning them. They enable the heart to act smoothly. Ventricles, without them, unless their figure were that of a perfect cone, would be a torment to the being to which they belonged.

From what has been advanced, I have been led to believe that the heart moves as exemplified in the following diagram.

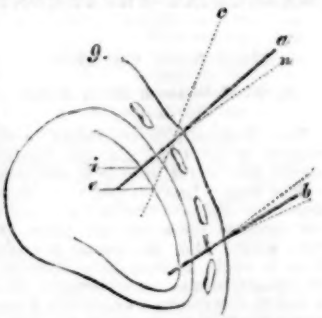
Let *Fig.* 8 represent the heart, *a* ventricles, *b b* auricles, contained in the pericardium, *c*; suppose the ventricles to have arrived at their extreme distention; the instant contraction commences, the auricular valves are closed by the blood; but no important alteration in the size or form of the ventricles takes place, until the pressure on the blood contained in their cavities becomes greater than that in the arteries; when the basilar portions sink towards the apex, as from the line below *b* (on the right) to the dotted line below *i*, occasioning partial or perhaps total obliteration of their cavities. While this depression of the base of the ventricles is taking place, the auricles *b b* swell into the space *i i* receded from, thus rendering it unnecessary for the pericardium, and consequently the parts in contact with it, to close in upon the contracted ventricles. During the diastole of the ventricles, the reverse of this movement takes place; i. e. the bases of the ventricles rise into the spaces *i i*, from which the auricles withdraw.

It will naturally be questioned by what power the ventricles recede toward their apex, when from their attachment to the aorta and pulmonary artery, one would be led to conclude that the apex and the other portions of the ventricles would be drawn toward the orifices of those vessels. Let us for a moment reflect on what would be the movement of the ventricles if they were quite free. It is certain that in ejecting their contents by the arterial orifice at their base, they would recede in the opposite direction, that of their apex. This motion would be serviceable with regard to the heart's minor function, that of receiving the blood; for, by abstracting pressure from the auricles, it would induce the flow of blood into them by the force commonly called suction. Could it for a moment be supposed that nature would use means to oppose this natural and useful movement of the ventricles in order to establish a movement in the opposite direction, i. e. that of the arterial orifices, which must tend to trammel the dilatation of the auricles, causing them to swell in a direction upwards and backwards, while the ventricles contracting toward the above points must alternately drag towards and push from these points, the lungs, &c. in contact with them? If the orifices of the aorta and pulmonary artery were the fixed points towards which the muscular fibres of the ventricles contracted, the heart, at each beat, would move in the manner of the simple heart represented by *Fig* 4, produce much agitation in the chest, and occasion a bruit de soufflet, by causing the entrance of air into that portion of the lungs which is suddenly dragged into that space from which the substance of the ventricles must unquestionably recede in tending toward the above points.* Such action as this is highly inconsistent with that delicacy and precision which nature displays in all her works. The obliquity with which the aorta and pulmonary artery arise from the ventricles, would permit a slight descent of their orifices toward the apex; and the necessity for much movement of these parts might be, and I believe is, obviated by the posterior and lateral portions only of the base descending.

The above essay was forwarded to THE LANCET some months since, and recalled for the purpose of attaching to it the details of the following experiment, which I had the opportunity of making a few weeks after, and the result of which would, I conceived, add some weight to my opinions.

Experiment to determine the most fixed portion of the ventricles during their systole.

A horse was shot, fell on his right side, and lay motionless. Behind the left shoulder and between the ribs, a stout wire was thrust through the parietes of the chest into the heart, as represented in diagram *Fig.* 9, line *a*. At first the wire was stationary, or moved with great irregularity; but as the action of the heart became stronger, it moved pretty nearly in the direction of the axis of the heart, as represented by the dotted lines. The movement from *a* to *e* was performed *steadily* and *forcibly*, and occupied about one-quarter of the time of one beat. The



* The most common form of bruit de soufflet is, I believe, occasioned by a movement of the heart analogous to that described; its diagnosis may be formed by its being loudest over those portions of the lungs in contact with the pericardium, and by its greater intensity during inspiration.

rod then seemed to spring back to *a*, by the elasticity of the tissues in which it was inserted. It then remained at *a* till the next beat, when the steady movement from *a* to *c* again took place. Another wire, *b*, was thrust into the apex: this wire remained nearly stationary, oscillating slightly, as represented at line *b*. This wire could, with slight force, be moved in any direction, except during the steady movement of the other rod from *a* to *c*, when it became somewhat firmly fixed. The wires were withdrawn, and again inserted with similar results; and as the heart acted many minutes with great regularity, very slowly, and with considerable strength, I think the experiment very conclusive. The rod, *a*, was first inserted in order to avoid the error which a possible transfixion of the apex might have occasioned. On examining the chest of the animal, it was found that the rod had entered the right ventricle nearer to the base than to the apex; and in neither case had the wire reached the opposite wall of the ventricle. The tissues of the intercostal muscles, where the wires passed through them, must have been the fixed points, and, consequently, the internal portions of the wires must have moved as represented in the sketch. The portion of the walls of the right ventricle, marked *i*, must have descended to *c*, while the apex remained fixed.

Stowmarket, 1833.

OBJECTIONS

TO THE

MERCURIAL TREATMENT

OF

MALIGNANT CHOLERA.

By W. M. Wilson, *M.D., Belfast.*

The reappearance of cholera in the vicinity of this town, and the rumours abroad that it was actually at our doors (which happily have not been verified), induced me, lately, to present to the public the result of the experience which had been gained while the disease prevailed here in 1832. I chose the medium of a newspaper, because the information which I had to communicate, and which I hope to be able to show in the sequel was of great general importance, required to be promptly and extensively diffused; and I merely followed the example of all Boards of Health in the kingdom, which, out of consideration for the public safety, issued, under every form and in every mode, popular directions for the guidance of the community; hence every individual, from the highest to the lowest, medical or not, discussed the subject of cholera, and each had provided himself with his favourite remedy. While I have received many thanks from those quarters where the disease is now prevailing for the good I have done, much unbecoming obloquy has been heaped on me here, and most unworthy motives attributed, for having come forward in the discharge of a duty, which to me had all the force of a moral obligation; and I cannot see how many of my professional brethren, who entertain the same sentiments with myself, can reconcile it to their conscience, not only to avoid the open expression of their opinions, but, by their public acts, nullify the conclusions at which I, in common with themselves, have arrived; however, the eleven or twelve medical Inspectors under the Board of Health—that most meritorious class of practitioners, including some of the most experienced professional men of this town, who laboured early and late among the narrow lanes and filthy abodes of the poor, and had *personal* experience of the epidemic,—they, almost to a man, are with me.

The facts which I am about to disclose, and the conclusions drawn therefrom, are, I apprehend, of great general importance, and as they will occupy a very prominent part in all future reasonings on the disease, I trust they will not be deemed unworthy of a place in your widely-circulated journal.

Cholera commenced in Belfast on July 28th, 1832, and ceased Dec. 24th, 1832. The number of cases reported to the Board of Health, during this period, was 2833, among a population of upwards of 55,000. Of the 2833, 1177 were admitted into hospital, and of these 282 died; 1656 were treated at their own houses, and 136 died. Two great modes of treatment were going on simultaneously—viz. *the hospital*, strictly Indian—and *the town*, conformable to the directions set forth by the Edinburgh Board of Health. In the hospital, the remedies were, *bleeding, diffusible stimulants*, calomel, and opium; in the town, diffusible stimulants and opium.

The greater comparative mortality in the hospital is accounted for by the greater number of bad cases received therein, for the poor are naturally averse to hospitals, which, for their own sakes, is much to be regretted, as the accommodation provided in all such places might be an object of envy to the rich. They, in general, refuse to avail themselves of such advantages, until their circumstances be-

come desperate, and until the time, for the most part, is passed, wherein effectual aid could have been bestowed. While we concede that the greater number of bad cases were, of course, admitted into hospital, it is equally true that numbers of cases, with very slight premonitory symptoms, or with symptoms generated by terror alone, found their way there also; for the medical inspectors were directed to forward every case to hospital, whether *incipient* or *advanced*. In some districts of the town, from peculiar circumstances, all the patients went in, while in others comparatively few. In one of these latter districts, a medical inspector, an old naval surgeon, with all the habits of attention and regularity instilled into him by his education on shipboard, has noted the name, age, sex, residence, and *symptoms*, of 253 patients, treated by him, at their own homes, on the *non-mercurial* plan; and with the exception of 12, they had all the characteristic marks of malignant cholera—viz. vomiting, purging, and cramps, and the deaths were only 18. In the hospital five pounds of calomel were used, in the town five drams—certainly not five ounces.

From these facts the inference is, and it appears to me to be irresistible, *that calomel is unnecessary in the treatment of cholera*; and from having witnessed, what every physician must, who has seen the preparations of mercury extensively used, the dreadful consequences entailed on the great majority of those whose constitutions have been subjected to its general action, I have considered it an imperative duty to raise a warning voice against its employment in cholera; and the more so, as the poor, who are unfortunately the most obnoxious to the attacks of the disease, cannot command the careful *after treatment*, which secures the rich against such deleterious effects. No one, at the present day, can be so hardy as to deny, that a mercurial course *deteriorates* the system. Mercury, it is true, must be used in some diseases, but when it effects a cure, it does so at the expense of the constitution. I conveyed my disapproval of the mercurial treatment in such terms as would cause the junior members of the profession, into whose hands cholera patients generally fall, to pause and reflect ere they entered upon a dangerous path, and I wished to remind them of the sage maxim which they must have heard from every professor's chair—"if your medicines can do no good, be sure that they do no harm." My observations were also intended to apply to its use or rather *abuse* in all other diseases. Why was it that particular directions on the subject of mercury were issued from the army medical board several years ago, which have had the effect of banishing it almost entirely from the treatment of certain classes of disease? Why is it that we see so many valetudinarians returning from the East with shattered constitutions? Is it not partly owing to the repeated salivations which they have undergone for diseases of the liver? Why is it that the most eminent practitioners in civil life are gradually expelling mercury from their list of medicinal agents? Is it not, because they have often found the remedy worse than the disease?

I have passed nearly the same degree of censure on the inordinate use of spirituous liquors in cholera. I am one of those who believe that, in this way, a deep moral wound has been inflicted on our poor, and I am not free from apprehension that a similar injury has been done among persons of a more elevated class in society. On this subject I may dilate more at large in some future communication.

Belfast, Ireland, Jan. 28, 1834.

CASE OF

TIC DOULOUREUX

IN THE PERONEAL NERVE.

By Ed. Simon Snow, *Esq., Surgeon, Chester.*

Mrs. B., æt. 38, a married lady, and having a family, had, for several years, suffered from a severe neuralgic affection of a cutaneous twig of the peroneal nerve, near the outer ankle, the part being marked by a slightly elevated white spot. The paroxysms of pain generally came on in the morning, so soon as she rose and placed her foot on the floor, and continued very violent for an hour, sometimes during the whole day, with occasional intermissions. She bore her sufferings with heroic fortitude. She had been under the care of several medical gentlemen in Liverpool, who directed their attention to the spinal column, as the source of the malady. Upon making pressure at about the third lumbar vertebra, tenderness and pain were produced, which she described as coursing along the ischiatic nerve, down the thigh and leg, to the spot near the ankle, where the pain yielded to the remission of the pressure on the spine. There was no swelling, nor any visible deformity, nor did she complain of pain, except when the part was pressed upon. Leeches, blisters, and various applications, were tried for a length of time without relief. About three years ago she was seized with an attack of

hemiplegia, from which she subsequently recovered, but her head has remained uneasy, with a partial loss of memory, ever since.

On the 16th of May last I was requested to see her, in consequence of a violent spasmodic affection of the extremities of the right side, which were occasionally thus affected to an alarming degree. I prescribed a dose of calomel and aperients, with a view to regulate the bowels, which had become disordered, and a low diet, according to her own particular request. The tic still continued, and on the 18th of June Dr. Thackeray of this city was requested to attend her with me. He directed an issue to be made on each side the lumbar spine, and requested that she would confine herself to an horizontal posture. Tonic bitters and rhubarb were also prescribed. At the end of six weeks, finding no relief, the issues were healed, and she quitted her bed for the drawing-room, where she remained during the day time.

July 31. Dr. Thackeray prescribed the following:—

℞ *Carb. Ferri* ʒij;
Pulv. Rhei gr. ij. M. Fiat pulvis 4ter die sumend.

She preferred taking this in water. In less than a week the dose was increased to ʒss, and for some time to ʒj four times a day, which she continued to take with great regularity until the 19th of October, using daily also the cold shower-bath, and visiting the sea-side. At the end of this time she felt quite free from pain, the usual paroxysms had left her, and she could walk without experiencing pain. She continues perfectly well, with the exception that her memory is still impaired. She enjoys better health than she has done for many years, and the tenderness of the spine has disappeared.

Chester, Jan. 1834.

MILLS FOR POLISHING RICE

FOR THE ENGLISH MARKET.

To the Editor of THE LANCET.

SIR,—I beg through the medium of THE LANCET to submit to Dr. Tytler and the medical public a fact which came under my notice in the early part of the year 1828, and which has been forcibly recalled to my mind by the perusal of the 55th page of Dr. Tytler's pamphlet.

In the months of February, March, and April, of that year, I occasionally visited the superintendent of the very extensive *Rice Mills* situate on the Surrey Canal in the immediate vicinity of London. In a conversation with him on the relative merits of "East India Rice" and "Carolina Rice," he stated that they (the proprietors of the mills) grew, imported, and themselves manufactured into a form of food, the "Carolina rice," which he maintained was beyond all comparison the best; and to prove his position he said,—"Here is a sample of *Carolina rice*—take it and go with me into the mill, where you shall have an opportunity of comparing it with some *East India rice* which we are now *dressing over again*." On entering the mill I was shown a considerable quantity (many quarters) of rice, represented to be from the East Indies, the grain small in size, of a deep brownish red, and excessively dusty. On my admitting that there was obviously no comparison between the samples, the superintendent observed that East India rice was of a worthless description, adding, "It is even so very inferior that we have actually had *this* rice *given* to us by the importers, on our being at the *expense of removing it* from their warehouse to our mill, and we are obliged to polish it over again before we can send it out."

The process used for dressing the rice was that of beating it in a mortar, with a pestle, of which fifteen were then working by steam. The pestles were comparatively light, while the mortars were of considerable dimensions, each containing, if I mistake not, three bushels of grain. The successive supplies of rice were severally beaten in the mortars for a quarter of an hour, and then removed and winnowed. The quantity of dust thrown off during the beating was beyond anything of the kind I ever saw; pervading the whole mill, of a most suffocating nature, and almost impervious to vision.

In this communication I shall not attempt to pursue the various arguments which may be founded on the statements it contains. To the profession I present it for reflection, and to Dr. Tytler as an illustration, contenting myself with making

known that the same mercenary imposition is practised in England which Dr. Tytler has shown to be performed in India, and in utterly confuting such confident declarations as those of Mr. Headland, reported in THE LANCET, Oct. 19, 1833, page 148, and of the "very veracious and respectable authorities" who imposed on him the statements which he was induced to communicate to the Medical Society.

I am, Sir, your very obedient servant,

J. T.

January 30, 1834.

WESTMINSTER MEDICAL SOCIETY.

Saturday, February 4, 1834.

DISEASES OF THE HEART.—RHEUMATISM.

DURING the half-hour allotted to the discussion of miscellaneous subjects, a member related a case of enormous hypertrophy of the heart. The organ had attained the weight of five or six pounds, the mitral valves were ossified, and the pericardium was confounded in the mass by adhesions and adipose depositions. The distress which the patient experienced and the disturbance of the respiratory and circulatory functions were described, and a pain occurring regularly at intervals of three weeks at the pit of the stomach, was particularly dwelt on as a remarkable symptom of the case. The custom of asking for information on cases of interest has been much resorted to in the Society lately, and often apparently with good effect to the inquirer. Such accidental conversations are calculated to yield much useful information. In the present instance several questions were put relative to the early symptoms, the progress of the disease, its duration, the age of the patient, &c.

Dr. JAMES JOHNSON inquired whether the symptoms had been preceded by any rheumatic affection. He was sure that many of the organic affections of the heart had no other origin than translated rheumatism, and related several cases in support of the opinion,—one in particular, in which the symptoms were of a terrific character. The patient was a youth, aged 16. About a year since, water accumulated in his chest, and in the cavity of the pericardium; a large collection of fluid also collected in the cavity of the peritoneum, the limbs were generally anasarcous, and all the symptoms became so urgent, that he (Dr. Johnson) had often felt convinced on leaving his patient at night, that the struggle would terminate before morning. This was a year ago, and yet the lad was now living, able to ride out in a carriage, enjoy life in some degree, and presented an appearance to many persons of perfect health, though, sooner or later, he must perish by the disease. The remedies employed were, elaterium, colchicum, and blood-letting before their exhibition, with other agents according to the indications. There was nothing more common in diseases of the heart than the occurrence of anomalous symptoms. Pain of a periodic character was often felt in the shoulders, the back, the sides, the pit of the stomach, the arm over the insertion of the deltoid muscle, the lower extremities, and even the symphysis of the pubis, without the existence of anything in the principal affection to account for it but rheumatism. He even believed that pain at the symphysis was more frequently complained of in these diseases than at the epigaster.

Mr. SMITH related the case of one of his pupils, in which the post-mortem examination exhibited a considerable degree of hypertrophy, ossified mitral valves, and the existence of a firm ring at the origin of the aorta, greatly contracting its orifice. This contraction would probably explain (by its resistance to the current of the blood) the cause of the hypertrophy of the heart. (The preparation was shown in the room.) He was much more disposed to look upon these affections as the results of inflammation than as arising from transferred rheumatism.

Dr. GREGORY thought the increased size of the heart might be considered as a necessary consequence of its increased action. He was consulted on the case of a pugilist, in whom at a pugilistic exhibition the biceps suddenly swelled out, and was for a considerable time the seat of great pain on the least attempt to use the arm.

Mr. COSTELLO admitted the conclusion deduced from the principle of increased action, but did not consider that the premises laid down fairly led to it; the sudden swelling of the biceps had, he believed, nothing to do with increased action; it was simply the result of a bursting or laceration of the fascia which enveloped it. He (Mr. C.), although such cases were rare, had seen several of them. That sheath was necessary to the action of the muscle, and, when once torn, a dislocation of the muscle ensued, preventing it from being again thrown into action without pain, until a new fascia was produced.

Such ruptures of fascia occurred in other muscles of the body.

Mr. HUNT did not believe that the exercise of a muscle added to the size of the muscular fibre, but to the inter-fascicular substance which bound those fibres together.

Mr. Hunt, Dr. Copland, and Dr. Johnson, spoke of the treatment suited to this affection. Mercury till it slightly affected the mouth was of great use. No remedy seemed to possess such power in opening the sluices and emunctories of the body. Colchicum was also very useful in combination with it. Dr. Copland spoke favourably of the use of iodine.

Mr. COSTELLO was fully convinced of the value of these remedies, but on this subject and the connexion said to exist between the affection under consideration and the metastasis of the rheumatic principle, he had some observations to offer. Mr. Smith believed that the inflammation of rheumatism had this peculiarity, that it went through all its stages, but stopped short of suppuration, and that the qualities of abstracted blood gave evidence of high inflammation. He (Mr. Costello) admitted this peculiarity of the blood in rheumatic affections. There were more plastic elements in the blood of persons labouring under rheumatic affections than could be found in common inflammation. He had seen in such cases as much buff in the ninth and tenth abstraction of blood, as in the first, and far from inferring from that circumstance the necessity of pursuing the practice, he simply regarded it as a characteristic of that fluid in rheumatism. He approved of abstracting blood before giving mercury, but was far from considering the existence of buff as an encouragement to proceed in blood-letting to the extent he had mentioned. The influence of mercury on this plastic condition of the blood was very remarkable. In fact, in exciting the eliminatory processes of the system, it diminished the quantity of fibrine in the blood, and in that manner might influence the disease by checking the progress of hypertrophy. He believed it might also be remarked, in comparing the effects of iodine and mercury, that iodine acted on the glandular and adipose structures, while mercury, through the secretions, exerted its influence on all the tissues of the animal economy.

Dr. STEWART inquired whether Mr. Costello had observed any cases in which iodine and mercury had been combined.

Mr. COSTELLO said he had not, but he thought that as mercury could be pushed only to a certain extent, its use might be beneficially followed up with iodine.

LITHOTRITY.

Mr. COSTELLO (from whom a paper on the torsion of arteries had been announced), at the close of the debate, said he was pleased that his observations on the torsion of arteries must be deferred till the next meeting, for had he occupied the attention of the Society with that subject, the discussion which had just terminated, would not have been elicited. He would now present to the Society a patient upon whom he had operated for stone by lithotrity.—Mr. HUNT, who was present at the operation, then narrated the case. The patient was seventy years old, and had laboured under his symptoms for eighteen months or two years; he was operated on four times, and had suffered little or nothing during the operation. (The old man here, in answer to a question, said that the pain was not worth mentioning, and now he felt quite well. He was recommended to Mr. Costello by Mr. Corbyn of Bristol. He was under treatment only a fortnight.)

Dr. FERGUSSON said he was present at the operation, and wanted words to express his astonishment at what he saw. The operation might be considered as the *acme* of manual dexterity. The absence of all "preparation" particularly pleased him. Neither bed, nor vice, nor any preliminary thing, to notify the approach of an operation, was employed. The introduction of the instrument for breaking the stone, and the expulsion of the fragments, were the work of about two minutes; it was like clock-work for its orderliness, and legerdemain for its celerity and results. Often fearful of having stone, he now felt relieved from the dread which the anticipation had hitherto occasioned.

Dr. J. JOHNSON said he had witnessed several operations of the same kind performed by Mr. Costello, and they had left on his mind the same impressions as those expressed by Dr. Fergusson. The absence of all parade was a new and most valuable character in the reduction of this formidable disease. He last year saw a case in which an enormous stone was broken up with the greatest ease, and in great part removed, but the patient ultimately sunk. At the examination after death, the cause of failure was accounted for in the fact, that the kidneys were filled with stone, and so diseased generally, as to be no longer capable of performing their functions. The ureters, bladder, and prostate, were also one mass of disease. Great skill, dexterity, and humanity, were thus rendered totally unavailing.

The Society then adjourned.

LONDON MEDICAL SOCIETY.

Monday, February 3rd, 1834.

Dr. TYTLER this evening took a brief review of what he considered to be the present state of the rice-and-cholera question, after which Mr. HEADLAND objected to the renewal of the discussion thereon, when

The PRESIDENT (Mr. Kingdon) said, that unless new facts bearing on the subject could be adduced, a revival of the question was not permissible. Dr. Tytler had, he said, already proved that diseased rice existed in this country to a great extent, and that it would produce disease. That disease demanded inquiry, and whenever fresh matter was elicited the Society would be anxious to receive it, but in the absence of additional facts, the re-discussion of opinions in that room was hardly necessary. The subject, however, deserved the fullest consideration,—not merely with reference to diseased rice, but to food generally, and the importance of attending more carefully to diet, both as regarded the quantity and quality of articles consumed by patients and the community at large. Dr. Tytler had already strongly excited their attention to the subject, and it would always be one of interest; additional facts, however, respecting the rice division thereof were now essential to its profitable debate.

Dr. TYTLER assented to the decision.

PRESSURE OF INFLAMED GLANDS.

Mr. G. JONES exhibited the gall-bladder of a boy, aged nine years, who died after recovery from typhus fever, in consequence, as it would seem, of over-distention of that organ with bile, caused by the obliteration of the passage of the ductus communis choledochus, by the pressure of inflamed glands on that tube. Three quarters of a pint of bile were found in the bladder, which was enlarged to many times its normal size. Mr. Jones took the opportunity of throwing out a suggestion, that the pressure of inflamed glands in the cellular tissue upon veins, were often the cause of affections little suspected to originate in that source; and the PRESIDENT, in reference to the subject, said, that he once saw a case in which the enlargement of a gland within the fold of the mesocolon, caused the entire closure of the passage of the ascending colon, the meso-cola binding the intestine down upon the inflamed gland, and producing during life all the symptoms of strangulated hernia.

TEA AND COFFEE-DRINKING.

Mr. COLE then read a supplement to the paper on the injurious effects of tea-and-coffee drinking, which appeared some time since in the pages of this Journal. It was confirmatory of the opinions then expressed, and contained many additional cases in support of his views. Mr. Cole deserves praise for drawing attention to the subject with so much care. His former communication has done much good, both in and out of the profession. This evening Mr. G. Jones, and Mr. Headland and Dr. Tytler, mentioned instances in which tea could not be drunk without producing deleterious effects. The President also referred to a case in which tea drunk in the morning, and coffee in the evening, always produced ill effects,—the reverse, none. The cause is probably this, that the stomach needing a nourishing beverage in the morning, finds it in coffee only. Needing none after dinner, it obtains a mere stimulant in tea.

An Examination into the Causes of the Declining Reputation of the Medical Faculty of the University of Edinburgh, and the Origin of another Class of Medical Professors, commonly called "Private Lecturers;" with some Remarks on the History of the University of Edinburgh. Edinburgh. W. Burness, 1834. pp. 59.

(From our Edinburgh Correspondent.)

THIS is an interesting pamphlet. It would have deserved attention at any time, but is particularly acceptable at the present moment.

It contains an *exposé* of the whole system of medical education at Edinburgh; it gives a comparative view of that part of the system which is pursued in the University, and that which is in the hands of the "private teachers;" and it draws a comparison between the talents of those teachers and the medical professors of the University. In the course of his statements the author boldly furnishes a diffuse account of the intrigues which have disgraced the elections of some of the present professors, unfolds the political jobs which have marked the creation of new chairs, and lays bare (most debasing of all) the bad spirit and indecent manœuvres of those individuals who have forced students to fee the possessors of

particular chairs, before they can obtain the medical degree.

These things afford ample and daily increasing matter for discussion. Corruption never ceases from her labours, while a penny is to be gained in their exercise, so the same system of election in Edinburgh, and the same taxation of knowledge, have continued from the first moment of their existence, and the right divine to the possession of chairs, the right by birth, by barter, by direct sale for money, or by political influence, is the only right ever for one moment acknowledged in connexion with those offices, with one or two singular exceptions. Let us review the facts bearing on the subject. Dr. Monro, the professor of anatomy, Dr. Home, the professor of physic, Dr. Hope, the professor of chemistry, Dr. Hamilton, the professor of midwifery, Dr. Christison, the professor of materia medica, and Mr. Russell, who has just sold his chair of clinical surgery, are each and all the sons of Edinburgh professors. And Dr. Alison, who teaches the theory of medicine, is the nephew of the late Dr. Gregory. So much for hereditary professors!

The botanical chair was awarded to Dr. Graham,—who, at the time of his election, scarcely knew the difference between a savoy cabbage and a golden pippin—through a political intrigue executed by the Duke of Montrose. The same Duke, with shame be it recorded, at the solicitation of the ever-contriving, courtly Halford, inflicted on the University of Glasgow the famed Dr. Badham. The four remaining medical professors are, Dr. John Thomson, Dr. Turner, the military knight Sir George Ballingall, and Mr. Syme. Dr. Thomson is represented by some, as one of the most practised intriguers of the day, and is said to have been the manufacturer of more chairs than would furnish a modern drawing-room; he first taught chemistry as a "private teacher;" he next became professor of surgery to the College of Surgeons—a chair of his own creation; and during Mr. Fox's short administration, he made an energetic attempt to create for himself a "surgical chair" in the University—Dr. Monro then holding the appointment of first professor of surgery and anatomy. He failed in this, though he succeeded in getting his political friends to dub him professor of *military* surgery—a most absurd appointment, especially when bestowed on one who had never served in the army. He had, however, the adroitness to get his countryman Sir James Macgregor to appoint him at once "Staff-surgeon to the Forces," and, further, to keep him on "full-pay," attached to the staff in Edinburgh, when hundreds upon hundreds of medical officers who had undergone all the fatigues and dangers of the Peninsular war, were on *half*-pay! Blush, Sir James, at this narration! Dr. Thomson next became a "private lecturer" on the practice of physic, being prompted to resign his "military chair" on giving up the practice of surgery. But the Doctor, still anxious to possess an "easy chair" in the University, managed about a year ago, not only to create a "chair of pathology" for himself in the University, but one of surgery for his friend and pupil Mr. Turner!

The chair of clinical surgery [illegible] purchased by Mr. Syme fr[illegible] for three hundred a-year [illegible] ciple on which this tra[illegible] ducted was fully detail[illegible] at the time. Perhap[illegible] would never have ha[illegible] dispute arisen betwe[illegible] Liston, who were bo[illegible] purchase of the chair!

Such is a sketch [illegible] *Chair-Market*.

It appears that all the [illegible] have been made by the medi[illegible] of the University for a series o[illegible] the regulations of the University, have invariably operated against the students, and stipulated for an increase of the emoluments of the professors, who are not only the teachers but the examinators of the parties taught,—a practice pregnant with mischief. The consequence of all this has been, that the number of the University students has progressively diminished, and the reputation of the establishment has rapidly declined. The mass of Edinburgh students, except those who intend taking degrees, attend the schools of the "private teachers."

A strong proof of the low ebb at which the University stands, is to be found in

the modern institution of the custom of calling over the names of the pupils in the different classes,—certificates being given to those only who attend regularly, or, rather, to those whose friends slip in their cards for them, for it is a very common thing for one student to hand in six cards at a time.

Towards the close of the pamphlet the author makes the following curious statement:—

"The professors of the University of Edinburgh are well aware that they have been granting medical degrees *without any* LEGAL *authority*. If an Edinburgh degree was questioned in a court of law, particularly in England or Ireland, there cannot be the least doubt that it would be found not worth one farthing, and could not be sustained. This opinion, which many sound lawyers entertain, is founded on the following fact,—that the University of Edinburgh *has no charter*.—Among the Scotch universities she stands alone, all the others having charters."

The pamphlet has created an extraordinary sensation throughout Edinburgh. [illegible] been read with avidity by practi[illegible] and students, and the statements [illegible]us must produce a powerful im[illegible] every other part of the United [illegible] If those statements admit not [illegible], the professors will soon have [illegible]ith Othello, that their "occu[illegible]ie."

THE LANCET.

London, Saturday, Feb. 8th, 1834.

MR. WARBURTON, on Tuesday last, the first day of the session, gave notice of a motion for Tuesday next, for the appointment of a COMMITTEE to inquire into the state of medical education and practice throughout the United Kingdom of Great Britain and Ireland. This early manifestation of zeal on the part of Mr. WARBURTON, will afford renewed confidence to the medical reformers residing in all parts of the empire.

IT may be presumed that one of the first subjects connected with medical education that will engage the attention of the PARLIAMENTARY COMMITTEE OF INQUIRY, will be the investigation of the medical discipline and capabilities of our several Universities. At page 749, will be found a short notice, furnished by our Edinburgh correspondent, of a pamphlet which has just appeared in the north, devoted to an explanation of the public and private systems of teaching a knowledge of medicine in Edinburgh, and exhibiting also some account of the modes in which the process of graduation has been accomplished, both there and in the sister institution of St. Andrew's. Having perused this pamphlet with considerable care, we only discharge a public duty in recommending it to general attention. The abuses which are laid open in its pages are of frightful extent, and of most odious character,—partaking, in the fullest manner, of the fraudulent abominations which have been so frequently perpetrated by the chartered medical corporations of London.

It is alleged by the writer that the University of Edinburgh is without a charter, and that the medical degree granted by that body is therefore only an honorary distinction, entirely divested of any legal privilege. St. Andrew's, it seems, hopes to secure, by the adoption of a more liberal system, a larger share of business in the trade of degree-mongering. Nothing could be more opportune than this contention between the two Universities,—a struggle, as far as the belligerents are concerned, quite divested, we conceive, of any spirit of national liberality or patriotism. The duty of the Legislature with regard to the Universities and chartered medical institutions of every description, is simple and of easy performance.

particular chairs, before they can obtain the medical degree.

These things afford ample and daily increasing matter for discussion. Corruption never ceases from her labours, while a penny is to be gained in their exercise, so the same system of election in Edinburgh, and the same taxation of knowledge, have continued from the first moment of their existence, and the right divine to the possession of chairs, the right by birth, by barter, by direct sale for money, or by political influence, is the only right ever for one moment acknowledged in connexion with those offices, with one or two singular exceptions. Let us review the facts bearing on the subject. Dr. Monro, the professor of anatomy, Dr. Home, the professor of physic, Dr. Hope, the professor of chemistry, Dr. Hamilton, the professor of midwifery, Dr. Christison, the professor of materia medica, and Mr. Russell, who has just sold his chair of clinical surgery, are each and all the sons of Edinburgh professors. And Dr. Alison, who teaches the theory of medicine, is the nephew of the late Dr. Gregory. So much for hereditary professors!

The botanical chair was awarded to Dr. Graham,—who, at the time of his election, scarcely knew the difference between a savoy cabbage and a golden pippin—through a political intrigue executed by the Duke of Montrose. The same Duke, with shame be it recorded, at the solicitation of the ever-contriving, courtly Halford, inflicted on the University of Glasgow the famed Dr. Badham. The four remaining medical professors are, Dr. John Thomson, Dr. Turner, the military knight Sir George Ballingall, and Mr. Syme. Dr. Thomson is represented by some, as one of the most practised intriguers of the day, and is said to have been the manufacturer of more chairs than would furnish a modern drawing-room; he first taught chemistry as a "private teacher;" he next became professor of surgery to the College of Surgeons—a chair of his own creation; and during Mr. Fox's short administration, he made an energetic attempt to create for himself a "surgical chair" in the University—Dr. Monro then holding the appointment of first professor of surgery and anatomy. He failed in this, though he succeeded in getting his political friends to dub him professor of *military* surgery—a most absurd appointment, especially when bestowed on one who had never served in the army. He had, however, the adroitness to get his countryman Sir James Macgregor to appoint him at once "Staff-surgeon to the Forces," and, further, to keep him on "full-pay," attached to the staff in Edinburgh, when hundreds upon hundreds of medical officers who had undergone all the fatigues and dangers of the Peninsular war, were on *half*-pay! Blush, Sir James, at this narration! Dr. Thomson next became a "private lecturer" on the practice of physic, being prompted to resign his "military chair" on giving up the practice of surgery. But the Doctor, still anxious to possess an "easy chair" in the University, managed about a year ago, not only to create a "chair of pathology" for himself in the University, but one of surgery for his friend and pupil Mr. Turner!

The chair of clinical surgery was lately purchased by Mr. Syme from Mr. Russell for three hundred a-year. The base principle on which this transaction was conducted was fully detailed in THE LANCET at the time. Perhaps the circumstances would never have had publicity had not a dispute arisen between Mr. Syme and Mr. Liston, who were both in treaty for the purchase of the chair!

Such is a sketch of the Edinburgh *Chair-Market*.

It appears that all the changes which have been made by the medical professors of the University for a series of years in the regulations of the University, have invariably operated against the students, and stipulated for an increase of the emoluments of the professors, who are not only the teachers but the examinators of the parties taught,—a practice pregnant with mischief. The consequence of all this has been, that the number of the University students has progressively diminished, and the reputation of the establishment has rapidly declined. The mass of Edinburgh students, except those who intend taking degrees, attend the schools of the "private teachers."

A strong proof of the low ebb at which the University stands, is to be found in

the modern institution of the custom of calling over the names of the pupils in the different classes,—certificates being given to those only who attend regularly, or, rather, to those whose friends slip in their cards for them, for it is a very common thing for one student to hand in six cards at a time.

Towards the close of the pamphlet the author makes the following curious statement:—

"The professors of the University of Edinburgh are well aware that they have been granting medical degrees *without any* LEGAL *authority*. If an Edinburgh degree was questioned in a court of law, particularly in England or Ireland, there cannot be the least doubt that it would be found not worth one farthing, and could not be sustained. This opinion, which many sound lawyers entertain, is founded on the following fact,—that the University of Edinburgh *has no charter*.—Among the Scotch universities she stands alone, all the others having charters."

The pamphlet has created an extraordinary sensation throughout Edinburgh. It has been read with avidity by practitioners and students, and the statements it contains must produce a powerful impression in every other part of the United Kingdom. If those statements admit not of refutation, the professors will soon have to exclaim with Othello, that their "occupation's gone."

THE LANCET.

London, Saturday, Feb. 8th, 1834.

MR. WARBURTON, on Tuesday last, the first day of the session, gave notice of a motion for Tuesday next, for the appointment of a COMMITTEE to inquire into the state of medical education and practice throughout the United Kingdom of Great Britain and Ireland. This early manifestation of zeal on the part of Mr. WARBURTON, will afford renewed confidence to the medical reformers residing in all parts of the empire.

IT may be presumed that one of the first subjects connected with medical education that will engage the attention of the PARLIAMENTARY COMMITTEE OF INQUIRY, will be the investigation of the medical discipline and capabilities of our several Universities. At page 749, will be found a short notice, furnished by our Edinburgh correspondent, of a pamphlet which has just appeared in the north, devoted to an explanation of the public and private systems of teaching a knowledge of medicine in Edinburgh, and exhibiting also some account of the modes in which the process of graduation has been accomplished, both there and in the sister institution of St. Andrew's. Having perused this pamphlet with considerable care, we only discharge a public duty in recommending it to general attention. The abuses which are laid open in its pages are of frightful extent, and of most odious character,—partaking, in the fullest manner, of the fraudulent abominations which have been so frequently perpetrated by the chartered medical corporations of London.

It is alleged by the writer that the University of Edinburgh is without a charter, and that the medical degree granted by that body is therefore only an honorary distinction, entirely divested of any legal privilege. St. Andrew's, it seems, hopes to secure, by the adoption of a more liberal system, a larger share of business in the trade of degree-mongering. Nothing could be more opportune than this contention between the two Universities,—a struggle, as far as the belligerents are concerned, quite divested, we conceive, of any spirit of national liberality or patriotism. The duty of the Legislature with regard to the Universities and chartered medical institutions of every description, is simple and of easy performance.

In establishing TRIPARTITE FACULTIES OF MEDICINE for regulating the practice, and confirming the rights of medical practitioners on precisely similar conditions throughout the united kingdom, it should be decreed that all the universities and colleges may grant degrees and diplomas as heretofore, but that in no instance shall a man be entitled to practise medicine, after the passing of the law, without undergoing a public examination before the proper authorities of one of the three divisions of the NATIONAL FACULTY.

Thus the diplomas, degrees, and certificates would be left to confer on their possessors a share of whatever reputation might belong to the institution by which they were issued. The FACULTY, in every instance, would thus present a protecting bar between the community on the one side, and ignorant teachers and fraudulent examiners on the other. In the operation of such a system we instantly observe what would be its effect on medical education. The admission of all candidates to an examination before the FACULTY, without reference to persons or places from whom or where their knowledge had been derived, would break down in the most effectual manner the scandalous monopolies of chartered teachers, and as the scrutators would be compelled, by law, to observe a strict uniformity in the leading principles of the knowledge demanded from candidates for the right to practise, the most genial spirit of emulation would be diffused amongst the teachers occupying chairs, and a uniform system of medical education necessarily enforced.

THE *rice* question is one of extraordinary interest and importance, not only to the people of England, but to the inhabitants of every country in which rice is consumed as an article of ordinary food. If the subject be regarded as presenting only a *simple* proposition to the mind, even in that case the general application of the inference necessarily deducible from the facts submitted to scrutiny, must extort from every impartial inquirer an involuntary acknowledgment of the advantages which the discovery of Dr. TYTLER must confer on mankind. When, however, the question is taken in a more enlarged sense,—when it is considered with reference to diseased grain in general, it becomes impossible to form the remotest conjecture of the sum of human life that may be preserved from the detection of a poisonous principle in the farinaceous products of certain culmiferous plants.

As rice forms the chief article of food of many eastern nations, it is boldly alleged that this well-known fact reduces the inductive theory of DR. TYTLER into a mere hypothesis, and converts all his positive statements, relative to the malignant diseases engendered by a diet consisting of vitiated grain, into speculative, gratuitous assumptions. There is no denying either the existence or the importance of the fact in question, but then it disproves not one of the arguments advanced by DR. TYTLER—it weakens not one of his conclusions—it shakes not in the slightest degree the clear and satisfactory evidence furnished by a host of respectable, disinterested witnesses. If it be a *fact* that millions of people subsist almost entirely on *sound rice*, is it not equally a *fact* that, since this subject was first introduced to the notice of the English public, an individual has died in London from having eaten *unsound rice*, almost as suddenly as though that person had partaken of a quantity of arsenic? Other *facts* have been elicited in London fully as corroborative of the existence of a deleterious principle in rice which was not at all suspected to be of an inferior quality. Thus, if the fact be established in only a single

instance that poisonous rice has destroyed human life, that fact cannot be controverted or weakened by proving that innocuous rice has preserved the lives of millions.

Let us, however, refer to a circumstance, bearing strongly on this view of the inquiry, the mention of which is not likely to interfere with our prejudices or interests. The grass lands of England sustain and fatten the finest flocks of sheep that are to be seen in the universe. Grass is the common, and, except during a month or two in the winter season, the only food of sheep. Now, what occasionally happens with respect to these hardy, docile animals? That when fed in certain pastures, numbers of them become the subject of a disease called the "rot." After wet seasons, this disease is known to be much more prevalent than after comparatively dry periods, in which vegetation has taken its natural healthy growth. Although this fact is admitted by every agriculturist, is it denied that grass is the ordinary food of sheep, and that it sustains and fattens millions of them annually? So is it with rice. It may, under certain circumstances, be productive of health and life, and yet, under adverse conditions of soil and grain, it may be capable of producing both disease and death.

In publishing the letter inserted at page 746 of this week's LANCET, signed "J. T.," we cannot refrain from observing, that it confirms in the fullest manner the allegations of Dr. TYTLER on points where the greatest incredulity prevailed amongst some of his hearers at the *London Medical Society*, and which appeared to be the least susceptible of proof. It is now certain that we have mills for polishing East India rice for the English market, close to the very walls of this metropolis. The letter of our correspondent has been properly authenticated.

THE operation of vivisection was so admirably executed on the culprit MACLEOD by Professor GRANT, that we were fully prepared to witness the crawl of the reptile through every species of dirt, in order to escape from the skilful hand of its tormentor. The miserable viper is "biting at a file."

MACLEOD, incapable of supporting the cause of his employers by argument, has sedulously laboured to throw discredit on our statements, by attacking the "morality" of THE LANCET, and in this his goodly operation, he has repeatedly accused this journal of "blasphemy," "falsehood," and "forgery."

With respect to the first of these accusations, we have merely to observe that MACLEOD is utterly ignorant of the meaning of the word he employs; wherefore we have only to say to him on this head, "Judge not, lest thou be judged." Of "falsehood," THE LANCET doubtless contains enough, since many of its pages exhibit the records of the proceedings of the BATS.

With respect to the third charge advanced against us by MACLEOD, viz., that of "forgery," it might, considering the character of our accuser, be dismissed as summarily as the other two accusations, but MACLEOD has now, for the first time, made a distinct reference to the circumstance on which he proposes to ground that infamous calumny. "In THE LANCET of August the 7th, 1830, there is," quoth he, "a *forged* letter *from Dr. Ramsbotham*." Why accuse THE LANCET of "forgery" if the "forged" letter be "*from Dr. Ramsbotham*?" The blockhead *meant*, of course, that there was a "forged" letter in THE LANCET, *purporting* to come "from Dr. RAMSBOTHAM." This "forgery" MACLEOD states is "remarkable *as being* "actually acknowledged in the next "number to have been the workmanship

"of the editor." It is necessary that we should copy the squib in question, and the few lines that preceded it, in order that our readers may have an opportunity of forming some opinion of the malignity and stupidity which could found so serious an accusation on so childish a circumstance. We copy the following paragraphs, therefore, *verbatim*, from page 745 of THE LANCET, vol. 2, 1829-30.

OBSTETRIC SOCIETY.—In a late number of THE LANCET we took occasion to inquire what had become of the "Obstetric Society." Dr. Ramsbotham, the hon. sec., has put forth a reply in the Yellow Journal for the present month. For the accommodation of our readers we have expunged a' that is no material to the stoory, but as the article thus abridged is still rather long, we must withhold comments until next week.

To the Editor of the Yellow Journal.

Sir,—As THE LANCET appears to be rather restless on the subject of our Society, and as the members have no desire to encounter its point, I have been directed to furnish you with the following short account of our proceedings.

I am, Sir, yours, &c.,
F. H. RAMSBOTHAM, Hon. Sec.
New Broad-Street, June 1, 1830.

The publication of this self-evident parody having elicited an angry note from Dr. RAMSBOTHAM, disavowing the authorship of any address to the "Editor of the Yellow Journal,"—which no one in his right senses could ever have thought of attributing to him,—we appended to the Doctor's disclaimer the following lines, which MACLEOD designates as the Editor's subsequent "acknowledgment" that *he* was the "forger" of the note.

[Did Dr. Ramsbotham ever see a puddle in a storm? We shall instruct our "transcriber of journals" not again to meddle with the Doctor's grammar, and instead of giving a point to his productions, to leave them pointless. The angry Doctor will excuse us for saying a few sharp things upon his Obstetrical Society shortly. —ED. L.]

Now, it will be observed, that, independently of the note having been addressed to the "*Yellow* Journal,"—a mode of expression which would scarcely have been recognised and printed in the now defunct "Medical and Physical," it was *stated* in the introductory notice, that *all that was not material to the story* which the Doctor related, had been expunged. Of course it is useless to advance another word on the subject; but we could not refrain from contributing another fact towards the development of the now fully-exposed character of MACLEOD,—of RODERICK MACLEOD,—at one time time the organ of the BATS, but now reduced to the unenviable occupation of trumpeter of his own ill fame. What is to be thought, we ask, of the mind and feelings of that man who, on so silly a parody as the one just quoted, could seriously found a charge of "forgery," in the criminal sense of that accusation? As a censor of "morals," RODERICK MACLEOD unquestionably stands alone in the world.

That no ill-feeling continued to disturb the peace of Dr. F. H. RAMSBOTHAM'S mind from the publication of the foregoing parody, may be inferred from the fact, that within six weeks after its appearance in THE LANCET, Dr. RAMSBOTHAM, happening to be present with Mr. LUKE, at one of the public meetings of the electors of Middlesex, held during the canvass for the office of coroner, took an opportunity, when the meeting was over, of assuring the Editor of this Journal (in which assurance he was joined by Mr. LUKE), with reference to some allusion, in the speech of Mr. WAKLEY, to be medical officers of the London Hospital, that he was wrong in supposing that those officers were hostile to him, and the Doctor concluded the conversation by warmly shaking Mr. WAKLEY by the hand.

SUNDAY DOINGS IN CONDUIT-STREET.

To the Editor of THE LANCET.

SIR,—It seems perfectly astounding that a man of Sir Astley Cooper's fortune and reputation should be guilty of the petty-fogging practices which appear to attach to him in consequence of the facts lately made public in THE LANCET; but that there is ground for the charge the enclosed will prove. Mrs. L—— went to his house to consult Sir Astley, and was there introduced to a young man, who gave her the enclosed recipe, with a statement that it was impossible to get it made up anywhere but at 112, *Poland Street*. The poor woman suspecting the trick, asked my opinion, which I readily gave her, and I send the prescription to you as proof-positive, offering to give you a little more information upon the same subject, if acceptable.

I am, Sir, your obedient servant,
A CONSTANT READER.

January 24, 1834.

P.S. Dr. *——, of G—— Street, also wants looking after.

(The Prescription.)

"℞ *Emp. Am. c. Hydrarg.* Roller.
"℞ *Sodæ Carb.* ʒss;
Pulv. Ipecac. gr. v. F. Pulvis bis die."

[On the back of the scrap of paper on which the above is penned, the name and address of the patient are written, and underneath, "112, Poland Street."]

MORE DOINGS IN CONDUIT-STREET.

To the Editor of THE LANCET.

SIR,—I have perused in your valuable journal, one or two letters relative to Sir A. Cooper's professional conduct lately, with much interest, as it has enlightened me with respect to a transaction which has lately affected me in the same quarter. The facts are these:—A patient of mine applied to Sir A. Cooper for his opinion, and on his return told me that Sir Astley "*had sent him* the requisite medicines." This, of course, astonished me not a little; but judge of my increased surprise, when I found that a little man (this was all the information I or my patient could glean of him) soon after called and proposed a further supply and regular attendance. This, Sir, is not a "pauper" case, such as those cited in your journal. The patient pays *his guinea* to Sir A. Cooper every time he sees him. It is useless to talk of Mr. Balderson, or any other ignotus, being the party really in fault in these transactions. Sir A. Cooper is the individual who should incur the disapprobation of the profession. Balderson is his *servant's* son! I had at first reason to believe that Sir A. Cooper was my rival in his new profession of general practitioner, as the medicines the first time came in his name. Your publication has since undeceived me, and I have now made up my mind as to the remedy I possess in future cases.

Can you, Sir, inform me if this Mr. Balderson is brother of the present servant, who, when a patient or a practitioner enters the waiting room of Sir A. Cooper, is to be seen reading the newspaper perfectly at his ease, and who seems to make it a point not to rise until Sir Astley's bell rings?

I am, Sir, your obedient servant,
LONDINENSIS.

January 30th, 1834.

THE APOTHECARIES ACT.

To the Editor of THE LANCET.

SIR,—On reading one of the late Numbers of THE LANCET, I find that a youth, who is *not* qualified according to the Apothecaries Act, has been elected apothecary to the York Hospital, though one or two gentlemen who are licentiates of the Hall, and members of the College, were candidates for the office.

This is not without a precedent. In the year 1827, Mr. Edward Chandler Parkinson, a licentiate of the Hall and member of the College, became a candidate for the situation of apothecary to the Finsbury Dispensary, when a youth of the name of Bartlett, who at that time was neither a licentiate of the Hall, nor a member of the College of Surgeons, was elected, and Mr. Parkinson, a married man with a family, was, in consequence, seriously injured in his circumstances.

For some time past a Baptist minister, whose name is Hemming, has been practising the three branches of the profession for emolument at Kimbolton in Huntingdonshire. How is it, Mr. Editor, that the Apothecaries Company has not interfered in either of the above instances, although apprized of the circumstances of each case? If it have no power, is it possible that such an inefficient and disgraceful piece of legislation as the Apothecaries Act can remain unrepealed? I remain, Sir, with the greatest respect yours,

A DISGUSTED LICENTIATE.

February, 1834.

ROYAL VETERINARY COLLEGE.

To the Editor of THE LANCET.

SIR,—As a student at the Royal Veterinary College, I cannot allow the letter in your last Number, containing some gross misrepresentations (as to the expenses necessarily incurred before a pupil can present himself to the board of examiners), to meet the eye of the public uncontradicted, nor can I forbear condemning in the strongest manner the tone of sarcasm and bad feeling pervading the epistle alluded to, as entirely uncalled for. I shall omit noticing this latter point any farther at present, and merely state facts as to the matter of the expenses.

Professor Coleman's fee....	£21 0 0
Asst.-Professor Sewell's....	3 3 0
Total	£24 3 0

The examination fee of 3*l.* 3*s.* has, I believe, always been paid in addition to the 21*l.*, by paying which, added to the privilege of attending the Professor's lectures, the theatres of the first lecturers in the metropolis are thrown open for a course of lectures gratuitously. With these advantages, I assure you, Mr. Editor, a young man of moderate education and abilities, by a proper attention to his teachers and dissecting, may with ease qualify himself to pass in a year; but, Mr. Editor, many of the pupils are not attentive, or are employed in making preparations, instead of properly dissecting and studying; the consequence is, after having attended for nine or ten months, they find themselves very deficient; and then, attending to too many subjects in a short time, they gain but a very superficial knowledge. And if, perchance, at their examination, Sir C. Bell takes them on the fifth pair of nerves, they will be, in all probability, rejected. You thus see that instead of the unconscious and innocent governors, professors, &c., the blame should be thrown on the pupils themselves.

If this be considered worthy an insertion in your deservedly popular periodical, by so doing you will oblige your very obedient servant,

A VETERINARY STUDENT.

London, Jan. 17, 1834.

ST. BARTHOLOMEW'S HOSPITAL.

WANT OF "SUBJECTS" AT ST. BARTHOLOMEW'S.

To the Editor of THE LANCET.

SIR,—There is a scarcity of subjects in all the anatomical schools of London, especially at St. Bartholomew's, where many of the pupils feel extreme disappointment, particularly those who are preparing for the College. I am one of those who unfortunately trusted to the general report, that the schools would be amply supplied this season. Indeed, Mr. Stanley in his introductory lecture promised us this winter a *plentiful supply*. The consequence of this is that I neglected to put down my name in the book that was opened at the commencement of the season, and have thus been compelled to wait the opening of a new book. I have asked twenty times when this new book would be opened, always receiving for reply that a "notice" would be given of it. However, on the 20th the new book was opened and the list filled up without any "notice" whatever being given, and without my being able to procure a single part. Who told Smith to say that "a notice" would be given, and who countermanded it? It is altogether an inexcusable breach of faith. Mr. Editor, what is to be done? Dissections cannot now be carried on clandestinely, and the idea of reviving the old system of "body snatching" is revolting. I repeat, what is to be done for me? A suggestion from you would infinitely oblige your obedient servant,

A BARTHOLOMEW PUPIL.

Jan. 21st, 1834.

*** The "lecturer" is bound to fulfil the terms of his contract, or, failing to do so, is bound in honour to return the student his entrance money. The trial during another session, strengthens, by numerous facts, our oft-repeated prediction that the Anatomy Act will never remove the prejudice which exists in the public mind against dissection, until the practice of buying and selling dead bodies is abolished by law. The charge for subjects in some of the schools amounts at present to four guineas each body, although in the majority of them the demand does not exceed fifty shillings. This exchange of money continues to render the occupation of dissecting, an odious pursuit, in the minds of the whole of the community.—ED. L.

INTRUDERS IN THE OPERATION THEATRE OF ST. BARTHOLOMEW'S.

To the Editor of THE LANCET.

SIR,—The following advertisement may be seen in large characters on the walls of the dissecting-room of St. Bartholomew's Hospital:—

"Post-mortem examinations—Railing in the Operating Theatre—A New Dead-House—A New Reading-Room—Wanted immediately."

Of the new reading-room, let those speak who are more interested in it than myself. My letter on the post-mortems, in THE LANCET of Jan. 4, produced a strong "sensation" in the hospital. The "railing" and the "new dead-house" are the subjects I am now about to "agitate." "Agitation" produces *sensation*, "sensation" leads to *action*, and "action" wisely directed produces *reformation*, which, in this institution, can only be accomplished *effectively* by "agitating" our grievances in THE LANCET. The operations, as is too well known, are not witnessed by more than one-half of the pupils, in consequence of the number of "foreigners," "friends," and "dressers," who surround the operator. This grievance, Mr. Earle, from time immemorial, has promised to remedy, by erecting an iron railing across the area of the theatre, from the corner of the lowest row of seats to the opposite wall, thus forming a space quite sufficient for the operator, the assistants, and the patient. Like many other promises, it remains unfulfilled. A month ago Mr. Sladden, a pupil at this hospital, observing a number of "intruders," and being probably prevented by them from seeing the operation, accosted Mr. Earle immediately after the patient was removed, told him that a number of persons were present who had no right to be so, and reminded him of his "broken promises." Mr. Earle replied—"Gentlemen, you know I am always very glad to see my friends here, many of whom have been pupils of this hospital; and as to the improvements, why, Gentlemen, I have tried, from time to time, to get the carpenter of the hospital to work, but he always pretends to have something to do in some other part of the building, and you know, Gentlemen, the carpenter is a great man in this hospital; however, I will see what I can do." Mr. Sladden appeared satisfied, either with this explanation, or with the humiliating *exposé*, that the carpenter of St. Bartholomew's is a more influential personage than Mr. Earle! He has done nothing yet. Even on Saturday last, a young "dresser" named Coates (he'll not offend again if he once sees his name in THE LANCET) obstinately persisted in standing in a situation which prevented at least twenty pupils from witnessing an operation performed by Mr. Vincent,—notwithstanding the reiterated cries of "head," "rough head" (it is very rough), "loggerhead," "blockhead" (*sotto voce*). With respect to the present dead-house, I don't think it resembles anything but a pig-sty, especially when about half-a-dozen "dressers" are "feeding" there. To describe it, would be to disgust your readers. I shall keep a sharp look-out, and if anything "particular" should occur, you may expect to hear again from, Sir, your obedient servant,

A BARTHOLOMEW PUPIL.

[The publication of this letter, as well as that which precedes it, has, from want of room, been unavoidably delayed a week or more.—ED. L.]

MIDDLESEX HOSPITAL.

CONCUSSION—LONG SUSPENSION OF THE MENTAL FACULTIES—RECOVERY.

THOMAS ALLAN, ætat. 13, was admitted into the Middlesex Hospital under Mr. MAYO, having just been thrown from a horse. Was sensible, but rather stupid; pulse small; vomiting. In a few hours complete stupor ensued; pulse very feeble; pupils dilated and insensible; skin cold; sickness continued. There was a small bruise, with effusion under the scalp at the left side of the head near the upper part of the squamous suture. The head was shaved, and a purgative was ordered. On the second day from admission the stupor yielded to a state of excitement of the mental faculties. He became insensible, and lay in bed screaming and hollowing loudly, disturbing all the patients in the ward; head cool; pulse quiet.

He continued thus for a fortnight. There was no decided indication as to treatment. The tongue was clean and the bowels regular; the pupils continued dilated, but during sleep were found slightly to contract. He is now more disposed to be quiet, but occasionally screams. He knows at times what is passing in the room, and can repeat what the nurse says to him, but he has not sense enough to answer questions. Swears a good deal, which he never did before, and is irascible. Eats whatever food is put into his mouth; lies with a vacant stare. Another week passed over with but little change in his condition; he was, perhaps, more sensible, but still screamed violently at times;

made no reply when addressed. He soon passed into an idiotic state, laughing and crying alternately. Said his prayers, and wished to kiss persons who came into the room. After another week had elapsed he began to regain his senses; spoke more rationally, recollected some events that had occurred, such as his falling from a horse, and being brought to the hospital; also having been visited by the surgeons.

Five weeks from the occurrence of the accident he left the hospital quite well. It was interesting to observe the various changes which took place in this case. There were first slight and then complete symptoms of concussion; a total loss of the mental powers. After some time, partial return of sensibility, and then a gradual increase of the mental powers until complete restoration of consciousness took place.

STRANGULATED INGUINAL HERNIA IN A FEMALE.—OPERATION.—RECOVERY.

January 8. Eliza Tozer, ætat. 28, stout and healthy, a cook, admitted under Sir CHARLES BELL, four months ago. After some exertion she perceived "a *small* lump" in the right groin. No inconvenience resulted, but yesterday morning at eight a.m., having "strained herself," the tumour increased in size, and became painful. Has seen several medical men, who sent her to the hospital, as they were unable to reduce the hernia. When admitted, thirty hours from the time the swelling had increased, the following was her state. Some pain in the abdomen; bowels constipated; pulse frequent and small; tongue white; vomiting. There was found an inguinal hernia of the right side; it felt soft and fluctuating, except at the base, where it was hard and unresisting.

After employing the warm-bath, bleeding, and the taxis, with no good result, a consultation was held, and, without further delay, Sir CHARLES BELL operated. The operation presented nothing unusual. Everything looked favourable. The intestine was of a pink colour, and a small quantity of pale serum escaped from the sac.

After the reduction the edges of the wound were brought together by adhesive plaster, and a bandage was applied. Two hours after, *Ol. Ricini* ʒvj, *Tr. Seunæ* ʒiij (a favourite prescription of Sir C. BELL in such cases), was given.

10. The night was passed without much sleep; and the next morning, the bladder not having been emptied, the catheter was passed. The bowels had been slightly moved; tongue clean; abdomen without pain; pulse scarcely above 100, and a little excited. Ordered the enema aperiens. Towards evening, some pain occurring, with increased power in the pulse, leeches were applied to the abdomen, and a few doses of calomel and opium were given. This removed the pain, and the patient went on perfectly well. The wound was healing kindly by the first intention, but some undue exertion on the part of the patient broke away the adhesions.

27. The patient is convalescent, and requests permission to get up. Appetite good.

HERNIA.—REDUCTION.—FATAL CONSECUTIVE EFFECTS OF THE STRICTURE.

Robert Monro, ætat. 60, was brought to the Middlesex Hospital, with symptoms of strangulated hernia, on November the 15th. These were, constipation; pain in the abdomen; constant vomiting; frequent pulse. He states that he has a rupture of the left side, for which he wears a truss. Three days ago "something" came down on the right side, which was returned the next day at St. George's Hospital. After this his bowels were freely moved. He left St. George's yesterday morning, but found the swelling come down in the evening. He did not apply at the Middlesex for advice until the following morning.

Upon examining the right groin there is found a small indurated inelastic tumour, in the situation of femoral hernia. The man is suffering extreme pain, and is so impatient that his replies are not altogether satisfactory. One account he gives is, that the swelling never entirely disappeared, but of this he is not certain. The warm-bath and bleeding were resorted to previous to employing the taxis, but no alteration in the tumour resulted.

The surgeons had now arrived at the hospital, and after debating the *pros* and *cons* of the case, the man was placed upon the operating-table; but just as the surgeon was about to commence, the man experienced an irresistible desire to go to the water-closet, where he passed a slight motion. The symptoms then increasing in severity, and the patient crying loudly for relief, he was again brought into the theatre, and Mr. MAYO operated for femoral hernia. Upon opening what appeared to be the sac, no intestine or omentum was found, neither was there any stricture. The hard body appeared to be of the same structure as gland. The obscurity of the case was now increased. The wound was again examined, and no cause being apparent externally to account for the symptoms, the patient was removed to bed. He continued much in the same

state during the remaining part of the day, exhibiting extreme anxiety; the thirst was incessant; the pulse frequent; there was vomiting of a thick green matter; pain and tension of the abdomen, and a sense of dragging at the seat of the supposed hernia. Pil. *Cal. c. Opio* j, 6tis; enema com.

16. Symptoms worse; tongue moist; pulse thready; stercoraceous vomiting. Has passed feces with the injection of yesterday. After getting up in bed, and calling out for the nurse, he lay down, and expired at four p.m., thirty-four hours from the time of admission.

Post-mortem Appearances. — Abdomen distended. Upon opening the cavity there was found effusion of a thick, turbid, feculent fluid in the peritoneum, and that membrane itself was inflamed. The intestines in parts were vascular; at the lower third of the ileum, opposite the supposed stricture, there was found a dark portion of intestine. It was highly inflamed, and perforated by an ulcer of about the size of the little-finger nail, thus giving exit to the contents of the stomach and intestines.

As at St. George's Hospital the hernia was reduced, it would seem that the intestine had suffered from constriction so severely as never to recover itself; the consequence of which was that ulceration and subsequent perforation ensued.

The case is of much practical utility. The facts warn us not to rely too much upon the statement given by the patient. From the suspicion which the man entertained, that "all the rupture had not been reduced," and the symptoms being of so severe a character, it was thought most prudent to operate without delay. The glandular body mentioned served also to mislead the surgeon as to the nature of the case.

UNIVERSITY OF ST. ANDREW'S.

To the Editor of THE LANCET.

SIR,—I have been directed by the *Royal Medical Society of Edinburgh* to forward to you the annexed paragraph as copied from the Edinburgh journals:—

"*Royal Medical Society.*—In consequence of the receipt of a copy of the resolutions of the Royal College of Surgeons, in reference to the late proceedings of the University of St. Andrew's, an extraordinary meeting of the Royal Medical Society of Edinburgh was held on Monday, the 27th inst., at which the following resolution was unanimously agreed to:

"That this Society return thanks to the Royal College of Surgeons for their attention in sending them notice of their proceedings relative to the St. Andrew's degrees. The Medical Society concur completely in the sentiments so ably expressed by the Royal College in their printed documents, and are glad to find that the College is ever ready to advance the real interests of the students, and enhance the dignity of the profession, by endeavouring to secure, as far as possible, an extensive and liberal course of education.

"By order of the Society,
"G. A. F. WILKS, President."

Should the interest you have shown in the late proceedings relative to the University of St. Andrew's, induce you to insert the above statement of the Society's proceedings in a page of your widely-circulated Journal, the object of the Society in forwarding it to you will be attained, namely, to give as much publicity as possible to their resolution on a question in which they conceive the interests of medical students generally are especially concerned. I am, Sir, yours, &c.,

G. A. F. WILKS,
President of the Royal Medical Society of Edinburgh.

Royal Medical Society's Hall,
Edinburgh, Jan. 29, 1834.

CHELSEA AND BROMPTON DISPENSARY.—A vacancy has occurred in this Dispensary in consequence of the resignation of Dr. VEITCH. What is to become of the Dispensaries? Although the resignation of Dr. VEITCH has been announced some time, not a single candidate has yet come forward for the vacant office. Even Dr. YATES, of Aldersgate-street notoriety, has not offered himself, though it is supposed that if he were to do so, he would receive some support from the tradespeople in the neighbourhood, as the drug-shop of his respected father is situated in the immediate vicinity.

CORRESPONDENTS.

The letter of "Chirurgus" published in the Clonmell paper shall be sent to a quarter where it will prove most useful. We shall be at all times happy to hear from our well-informed correspondent. At present, he has arranged his measures far too well to stand in need of any advice from us. It is to be hoped that public meetings of the profession in Ireland will be both numerous and respectable.

The letter of *A Licentiate*, although argumentative and ably written, would not, we think, aid the "good cause." We believe that the narrow position has been taken entirely from ignorance or oversight, and that the majority of the subscribers to the objectionable document, are influenced in their conduct by upright motives.

L. L.—We advise our correspondent to repeat his experiments in the presence of one of the lecturers on chemistry, not one of whom would refuse him the aid requisite on such an occasion. The publication of an anonymous complaint would not prevent the sale of the works in question; whereas, an acknowledged authentication of the detection of any of the errors they contain would be productive of advantage. In two of the instances, our correspondent would find, on additional trials, that he has fallen into some mistake in his manipulations.

Dr. Weatherhead has in the press a New Synopsis of Nosology, founded on the principles of Pathological Anatomy.

A *Subscriber.*—Surgeons having served in the Indian service can practise as such on their retirement in this country. But they cannot discharge the duties of apothecaries unless they were in practice as apothecaries prior to the 1st of August, 1815 Physicians and surgeons belonging to the Army and Navy labour under the same disqualification.

Owen Reardon may call at the office between twelve and one o'clock on Monday. But it appears to us that a further discussion of the question is unnecessary, and would prove useless.

It is not possible to publish the facts which are so ably related by Mr. J. T. Batten without subjecting us to the risk of an action for libel. We quite agree with Mr. Batten that there ought to have been an inquest, when the publication of the evidence would have been productive of much benefit to the community and the profession.

If the gentleman who forwarded a bank-note in payment for the insertion of an article in the body of The Lancet will direct a person to call for it at our Office, it shall be restored to him; or shall it be sent by post?

A Governor of the London Hospital.—There is no law to prevent the surgeon of an hospital from attending medical cases in private practice. Unless, however, he be a licentiate of the Apothecaries' Company, the Judges have decided that he is not authorised to supply his patients with medicines in medical cases.

The pamphlet on medical reform was not approved. The spirit in which the work was written was commended, but we hesitate not to assert, that if the project which it contained for remodelling our medical institutions were carried into effect, medical grievances would be multiplied to an innumerable extent.

Inquirer.—The patient left town suddenly. The operation was performed twice, but the result was not favourable. Having been furnished with the particulars from a private source, confidentially, we are not at liberty to make them public. The "Portman Square" case is instructive, and ought to be generally known.

Phthisis Impatiens.—We know nothing of the work in question, but advise our correspondent not to bestow his money on what will most likely prove a quackish performance. The author has shown that he is a humbug of the first water.

If *Mr. J. W.* will refer to the paper of Professor Capuron, and to the notes of the case which Mr. W. forwarded to our office, he will instantly perceive that there is no analogy between the instances cited; consequently the success of the efforts of nature in the case attended by Mr. W. does not by any means disprove, or even weaken, the statements of Professor Capuron. The account, which has been well drawn up by Mr. W., is interesting, but the case which he has related is not one of uncommon occurrence.

The letter of our correspondent *G.* displays considerable knowledge of the subject treated, but his proposal for depriving the Universities of the right of granting degrees, if it were seriously entertained by the profession, and submitted to the legislature for its adoption, would strengthen, to a frightful extent, the ranks of the inveterate anti-reformers. It will be quite enough, with respect to the Universities, to withhold from their graduates the right of practising medicine until they have passed an examination before the scrutators and jury officiating in one division of the tripartite Faculty.

To our correspondent at Elland, we have merely to remark, that he had better abstain from making any arrangement with respect to his friend until the termination of the new session of Parliament. At present it is difficult to conjecture what may be the decision of the Legislature relative to chartered or unchartered Universities. The publication has been sent to Durham.

Censor.—The names and circumstances do not refer to one individual. The "advertisement" is a disgrace to the profession, but the *advertiser* can receive sufficient punishment for his conduct only at the hands of the resident practitioners of the town.

Mr. J. W., Manchester.—We will examine the papers around us, but have no recollection of having received the communications to which our correspondent refers. The paper last sent shall appear in our next.

The communications forwarded under the frank of Mr. R. have all arrived, but it was impossible to use them this week.

The article entitled "Phrenology an" Sir —— ——," has been placed in the hands of o" publisher for the author. Pressed as we are wit matter, it would be highly inconvenient to us to publish the paper at this time. The inferences drawn by our intelligent correspondent might elicit a contradiction from —— —— that would raise up fresh obstacles to the study of the science in this country. The volume was received, and shall be acknowledged in form.

Analyst.—It cannot be expected that Dr. Clanny should reply to the ignorant strictures of Mr. Bird.

The communications of *Mr. Dunn*, and *Dr. Tweedale* and *Mr. Chadwicke*, shall appear next week. Mr. Greenwood's and Mr. Parker's cases have been received.

Mr. Grey.—Our reporter informs us that "the events took place at Gosthurst," but that something more will appear on the subject, after the publication of which we shall be happy to insert the proffered communication of Mr. G.

The paper of *E. V. M.* was received. The reasons for withholding it from publication at the time, have escaped our memory, but it shall be again perused.

Part 6th of Weber's Atlas is in the press and nearly ready for publication by Mr. Schloss.

Erratum.—College of Physicians, page 727, col. 2, line 4, *for* in point d'appui, *read* a point d'appui.